United States
Department of
Agriculture

Natural Resources
Conservation Service

In cooperation with
Tennessee Agricultural
Experiment Station

Soil Survey of Sumner County, Tennessee

How To Use This Soil Survey

General Soil Map

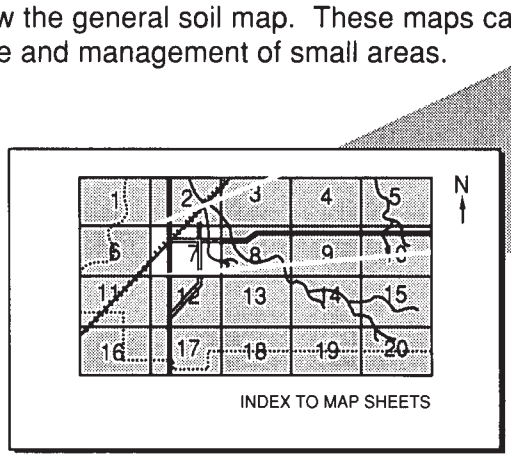
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

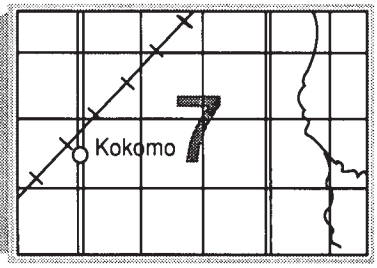
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.

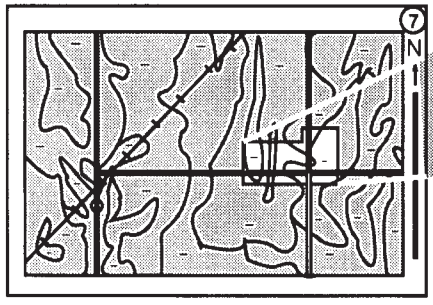


INDEX TO MAP SHEETS

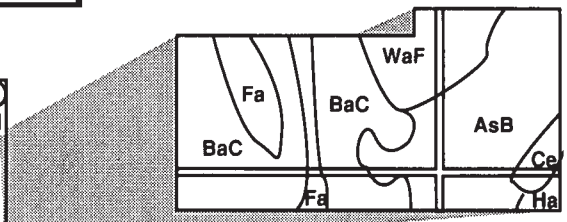


MAP SHEET

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1986. This soil survey was made cooperatively by the Natural Resources Conservation Service, the Tennessee Agricultural Experiment Station, the Sumner County Board of Commissioners, and the Tennessee Department of Agriculture. It is part of the technical assistance furnished to the Sumner County Soil Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Sumner County's proximity to Nashville, Tennessee, allows many professional people to reside in a rural environment. The soils in this area include Mimosa soils in the foreground, Egam soils in the middle ground, and Harpeth soils in the background.

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Issued November 1997

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Foreword

This soil survey contains information that can be used in land-planning programs in Sumner County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Jerry S. Lee
State Conservationist
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Soil Survey of
Sumner County, Tennessee

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United States Department of Agriculture, Natural Resources Conservation Service
in cooperation with
the Tennessee Agricultural Experiment Station, the Sumner County Board of Commissioners, and the Tennessee Department of Agriculture

SUMNER COUNTY is in the north-central part of Tennessee (fig. 1). It is bordered on the north by Kentucky. It is bordered in Tennessee by Macon, Trousdale, Wilson, Davidson, and Robertson Counties. Gallatin, the county seat, is in the south-central part of the county.

The land area in Sumner County is in two physiographic regions. About 55 percent is in the Highland Rim and Pennyroyal Major Land Resource Area, and about 45 percent is in the Nashville Basin. The county has a total area of 348,400 acres.

The Highland Rim, in the northern part of the county, consists of undulating to steep uplands. Most of the soils formed in limestone residuum or in 2 to 3 feet of silty material (presumably loess) overlying limestone residuum. Many of the soils are very deep and loamy. They have differing drainage properties, and some have a fragipan in the subsoil. Most of the soils on the steeper slopes of the Highland Rim escarpment and in the northeastern part of the county are droughty and moderately deep. They weathered from limestone and shale.

The Central Basin, in the southern part of the county, consists of gently undulating to hilly uplands and terraces. Most of the soils formed in clayey material that weathered from limestone or alluvium and the underlying clayey residuum. Most of the soils in rolling to hilly upland areas have a clayey subsoil. These soils are 8 to more than 60 inches deep over limestone rock. Outcrops of limestone rock are in some areas. The soils in broad, undulating upland areas are very deep and are well drained.

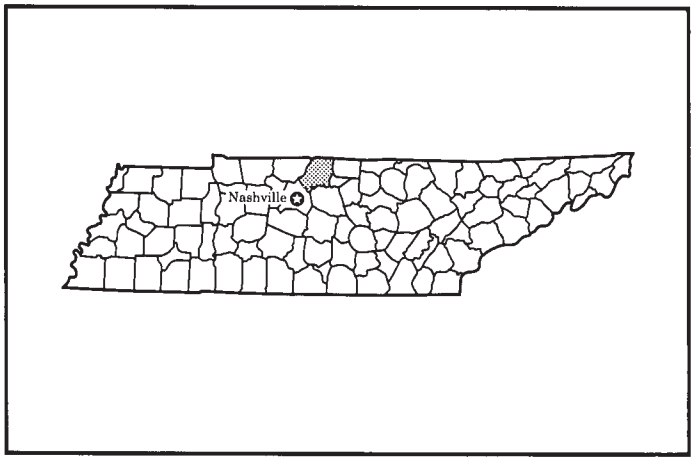

Figure 1.—Location of Sumner County in Tennessee.

Natural Resources

The main natural resources in Sumner County are the soils, streams, and forests. Most of the soils that have undulating slopes are well suited to use as cropland. Soybeans and corn are the major cultivated crops grown in the county. Tobacco is a major cash crop. Conservation practices that control erosion are needed on most of the soils. Many areas throughout the county are used for pasture.

Several large beef cattle farms are in the southern part of the county. Most of the steep and very steep areas are

used as woodland, and a few small sawmills are in the county. Several of soils in Sumner County are suited to urban and industrial uses. Because of its proximity to urban areas in Davidson County and to Old Hickory Lake, urban development in the southwestern part of Sumner County has been rapidly increasing. Several diverse industries have located in the county.

History and Development

Sumner County was created by an act of the General Assembly of North Carolina on November 17, 1786. It was formed from part of Davidson County, and it originally included parts of Wilson, Smith, Trousdale, and Macon Counties. Sumner County was named in honor of General Jethro Sumner, a Revolutionary War soldier and officer. Gallatin was named in honor of Albert Gallatin, Secretary of the Treasury under Thomas Jefferson. It was created by an act of the Tennessee General Assembly in 1801.

The first people in Sumner County were probably Paleo Stone Age Indians, followed by Archaic Period Indians and then Mound Builders until about 1600. Mounds constructed by the Mound Builders are found in the county. After about 1600, the area was used as a hunting ground by the Cherokee, Chickasaw, Creek, and Shawnee Indians.

The first Europeans in Sumner County were probably French traders and hunters who arrived during the early 1700's. Later, longhunters from colonies such as Scaggs, Smith, and Mansker hunted and explored the area. The first settler to clear land, plant corn, and build a cabin in Sumner County was Thomas Sharpe Spencer in the late 1770's. Many settlers moved into the area from Virginia and the Carolinas. The fertile soil, abundant game, and accessibility to the Cumberland River resulted in the area being quickly settled.

Bluegrass and thoroughbred horses were brought into the county in the 1790's. During the 1800's, Sumner County became well-known for thoroughbred racing horses.

Although the first farms in the county were small and self-sufficient, they soon grew larger. Many became plantations. Prior to the Civil War, farming was largely accomplished through the ownership and use of slaves. During the mid-1800's, tobacco was the major crop. Numerous distilleries and a few cotton-thread mills were in the county. In 1859, the L&N Railroad was built through the county. It provided transportation to an increased number of markets for products. In the 1880's, strawberries were introduced in the Highland Rim area and became a major crop produced in that part of the county. In the early- to mid-1900's, dairy and beef cattle operations became an important part of the farming economy, and industry began moving into the region *(3)*.

Physiography and Drainage

The landscape in Sumner County ranges from undulating in the northwestern and southern parts of the county to very steep along the Highland Rim escarpment. The landscape varies as the geologic formations vary because of the rate at which erosional processes have affected formations over a long period of time.

The elevation ranges from about 400 feet above mean sea level at Manskers Creek, which is below Old Hickory Dam on the Cumberland River, to about 1,085 feet above mean sea level on the Highland Rim escarpment in the northeastern part of the county.

The Highland Rim escarpment divides the county diagonally from southwest to northeast. Remnants of the escarpment form knobs and ridges, and they extend into the Nashville Basin in the southern part of the county. The elevation decreases gradually from the upper edge of the escarpment northward and also from the base of the escarpment to the Cumberland River.

From the upper edge of the Highland Rim escarpment, dendritic drainage systems flow northward into the Red River, West Fork Drakes Creek, and Middle Fork Drakes Creek in Kentucky.

From the base of the escarpment, the drainage systems flow southward into the Cumberland River. Manskers Creek, Drakes Creek, Station Camp Creek, East Camp Creek, and Bledsoe Creek drain most of the Central Basin part of the county into the Cumberland River.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Portland in the period 1955 to 1984. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 36 degrees F and the average daily minimum temperature is 27 degrees. The lowest temperature on record, which occurred at Portland on January 30, 1966, is -21 degrees. In summer, the average temperature is 75 degrees and the average daily maximum temperature is 86 degrees. The highest recorded temperature, which occurred on July 17, 1980, is 101 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to

schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 51 inches. Of this, 26 inches, or about 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 22 inches. The heaviest 1-day rainfall during the period of record was 8.05 inches at Portland on June 23, 1969. Thunderstorms occur on about 54 days each year, and most occur in summer.

The average seasonal snowfall is 10 inches. The greatest snow depth at any one time during the period of record was 12 inches. On an average of 5 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant

natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Bewleyville-Dickson

Very deep, undulating to rolling, well drained and moderately well drained soils that have a loamy surface layer and subsoil; formed in loess over material weathered from limestone

This map unit consists of soils on broad, undulating to rolling uplands. Slopes are dominantly less than 12 percent. This unit is in the northwestern part of the county on the Highland Rim.

This unit makes up about 6 percent of the county. Is is about 70 percent Bewleyville soils, 15 percent Dickson soils, and 15 percent soils of minor extent.

The well drained Bewleyville soils have a brownish, loamy surface layer and a reddish, loamy subsoil. They are on undulating to rolling uplands. The moderately well drained Dickson soils, which are on undulating uplands, have a brownish, loamy surface layer and subsoil. They have a fragipan at a depth of about 2 feet.

Soils of minor extent in this unit include the somewhat poorly drained Taft soils, the poorly drained Guthrie soils, and the well drained Sengtown and Nolin soils.

This unit is used mainly for cultivated crops. Soybeans and corn are the major crops grown. The hazard of erosion is a management concern. It can be overcome easily by applying conservation practices.

This unit is well suited to cultivated crops, small grain, and pasture. It is well suited to most urban uses, although areas of the Dickson soils are limited by the slowly permeable fragipan.

2. Mountview-Sengtown-Dickson

Very deep, undulating to very hilly, well drained and moderately well drained soils that have a loamy surface layer and a loamy or clayey subsoil; formed in loess overlying residuum derived from limestone and in residuum derived from limestone

This map unit consists of soils on undulating to very hilly uplands. Slopes are mainly less than 20 percent but are as much as 35 percent near drainageways. This unit is in the northern part of the county on the Highland Rim.

This unit makes up about 17 percent of the county. It is about 34 percent Mountview soils, 31 percent Sengtown soils, 20 percent Dickson soils, and 15 percent soils of minor extent.

The well drained Mountview soils have a brownish, loamy surface layer and subsoil. They are on undulating to rolling uplands. The well drained Sengtown soils have a brownish, loamy surface layer and a reddish, clayey subsoil. They are on rolling to very hilly uplands. The well drained Dickson soils, which are on undulating uplands, have a brownish, loamy surface layer and subsoil. They have a fragipan at a depth of about 2 feet.

The soils of minor extent in this unit include the somewhat poorly drained Taft soils, the poorly drained Guthrie soils, and the well drained Bewleyville, Nolin, and Ocana soils.

This unit is used mainly for cultivated crops and pasture. Some areas are used as woodland. The hazard of soil erosion is the main management concern in areas of cropland.

Undulating areas of this unit are well suited to cultivated crops. This unit is well suited to most types of small grain and pasture. It is well suited to most urban uses. The slope and the slowly permeable fragipan are limitations for some urban uses.

3. Guthrie-Taft-Dickson

Very deep, nearly level to undulating, poorly drained to moderately well drained soils that have a loamy surface layer and a fragipan; formed in loess or loess overlying residuum

This map unit consists of soils on nearly level uplands, in depressions, and on undulating uplands. Slopes are less than 5 percent. This unit is in the northwestern part of the county on the Highland Rim.

This unit makes up about 1 percent of the county. It is about 35 percent Guthrie soils, 30 percent Taft soils, 25 percent Dickson soils, and 10 percent soils of minor extent.

The poorly drained Guthrie soils are in depressions on nearly level uplands. They have a grayish, loamy surface layer and subsoil and have a fragipan at a depth of about 4 to 5 feet. The somewhat poorly drained Taft soils are on nearly level uplands. They have a brownish, loamy surface layer; a grayish, loamy subsoil; and a fragipan at a depth of about 2 feet. The moderately well drained Dickson soils are on undulating uplands. They have a brownish, loamy surface layer and subsoil and have a fragipan at a depth of about 2 feet.

The soils of minor extent in this unit include the well drained Bewleyville soils.

This unit is used mainly for pasture and woodland, although some better drained areas are used for cultivated crops. Wetness is the main management concern for most uses.

Unless it is drained, this unit is poorly suited to most cultivated crops. It is suited to use as pasture. It is poorly suited to most urban uses. The wetness and the slow permeability in the fragipan are limitations that are difficult to overcome.

4. Sugargrove-Sulphura-Dickson

Very deep to moderately deep, undulating to very steep, somewhat excessively drained to moderately well drained soils that have a loamy surface layer and subsoil; formed in loess overlying residuum derived from limestone or in residuum derived from limestone

This map unit consists of soils on undulating to very steep uplands. Slopes are 2 to 65 percent. This unit is in the northern part of the county on the Highland Rim.

This unit makes up about 16 percent of the county. It is about 50 percent Sugargrove soils, 20 percent Sulphura soils, 18 percent Dickson soils, and 12 percent soils of minor extent.

The well drained Sugargrove soils have a brownish, loamy surface layer and subsoil. They are on rolling to hilly uplands. The somewhat excessively drained Sulphura soils have a brownish, loamy surface layer and subsoil. They are on hilly to very steep uplands. The moderately well drained Dickson soils have a brownish, loamy surface layer and subsoil and have a fragipan at a depth of about 2 feet. They are on undulating uplands.

The soils of minor extent in this unit include the well drained Mountview and Ocana soils and the moderately well drained Tarklin soils.

This unit is used mainly as pasture and woodland. The slope is a limitation for most uses.

This unit is well suited to pasture. The less sloping areas are suited to cultivated crops. The unit is poorly suited to most urban uses because of the depth to bedrock and the slope.

5. Harpeth-Mimosa-Arrington

Very deep and deep, nearly level to rolling, well drained soils that have a loamy surface layer and a loamy or clayey subsoil; formed in old alluvium overlying residuum derived from limestone, in residuum derived from limestone, or in recent alluvium

This map unit consists of soils on broad, rolling uplands and on narrow, nearly level flood plains. Slopes are commonly less than 12 percent. This unit is in the southern part of the county in the Central Basin.

This unit makes up about 16 percent of the county. It is about 55 percent Harpeth soils, 12 percent Mimosa soils, 10 percent Arrington soils, and 23 percent soils of minor extent.

The well drained Harpeth soils have a brownish, loamy surface layer and subsoil. They are on undulating and rolling uplands. The well drained Mimosa soils have a brownish, loamy surface layer and a clayey subsoil. They are on undulating to rolling uplands. The well drained Arrington soils have a brownish, loamy surface layer and subsoil. They are on the nearly level flood plains.

The soils of minor extent in this unit include the moderately well drained Byler soils and the well drained Egam soils. The well drained Waynesboro soils are in a few areas of this unit near Old Hickory Lake.

This unit is used mainly for pasture and cultivated crops. A few areas are wooded, and some areas are used as urban land. Soybeans and corn are the major crops. The hazard of erosion is a management concern if cultivated crops are grown. It can be overcome by applying good conservation practices.

This unit is well suited to cultivated crops, small grain, and pasture. It is well suited to most urban uses, although

areas of Arrington soils are not suited because of the flooding. Many of the limitations for urban uses in the uplands can be overcome by using good engineering practices.

6. Mimosa-Harpeth

Deep to very deep, undulating to hilly, well drained soils that commonly have a loamy surface layer and a clayey subsoil; formed in residuum derived from limestone or alluvium and loess overlying residuum derived from limestone

This map unit consists of soils on undulating to hilly uplands. Slopes are dominantly 5 to 20 percent. This unit is in the Central Basin. It extends diagonally across the county from southwest to northeast.

This unit makes up about 23 percent of the county. It is about 52 percent Mimosa soils, 10 percent Harpeth soils, and 38 percent soils of minor extent.

The well drained Mimosa soils have a brownish, loamy surface layer and a clayey subsoil. They are commonly on undulating to hilly uplands. The very deep, well drained Harpeth soils have a brownish, loamy surface layer and subsoil. They are on undulating to rolling uplands.

The soils of minor extent in this unit are the moderately well drained Byler soils and the well drained Arrington and Barfield soils.

This unit is used mainly as pasture. Other areas are used for woodland, cultivated crops, and urban land. The slope is a limitation for cultivated crops that is difficult to overcome.

This unit is well suited to pasture. It is poorly suited to cultivated crops and to most urban uses. The slope, the slow permeability, and the depth to bedrock are limitations for most urban uses. These limitations are difficult to overcome.

7. Sulphura-Mimosa-Dellrose

Moderately deep to very deep, hilly to very steep, somewhat excessively drained and well drained soils that have a loamy surface layer and a loamy and clayey subsoil; formed in residuum and colluvium derived from limestone and shale

This map unit consists of soils on hilly to very steep uplands. Slopes are 12 to 65 percent. This unit is on the Highland Rim escarpment. It extends diagonally across the county from southwest to northeast.

This unit makes up about 15 percent of the county. It is about 54 percent Sulphura soils, 10 percent Mimosa soils, 9 percent Dellrose soils, and 27 percent soils of minor extent.

The somewhat excessively drained Sulphura soils have a brownish, channery surface layer and subsoil. They are on very steep hillsides. The well drained Mimosa soils have a brownish, loamy surface layer and a clayey subsoil. They are commonly on undulating to very hilly uplands. The well drained Dellrose soils have a brownish, loamy surface layer and subsoil. They are on hilly to very hilly foot slopes.

The soils of minor extent in this unit are the well drained Ocana, Humphreys, and Sugargrove soils.

These soils are used mainly as woodland, although a few areas are used as pasture. The slope is a major limitation for most uses.

This unit is poorly suited to cultivated crops, pasture, and most urban uses. The slope, the depth to bedrock, and slippage are limitations that are difficult to overcome.

8. Barfield-Rock outcrop-Inman-Harpeth

Shallow to very deep, undulating to hilly, well drained soils that have a clayey or loamy surface layer and a clayey or loamy subsoil; formed in residuum derived from limestone or in alluvium overlying residuum derived from limestone

This map unit consists of soils on undulating to hilly uplands. Slopes are dominantly less than 20 percent. This unit is in the southeastern part of the county in the Central Basin.

This unit makes up about 6 percent of the county. It is about 42 percent Barfield soils, 16 percent Rock outcrop, 15 percent Inman soils, 14 percent Harpeth soils, and 13 percent soils of minor extent.

The shallow, well drained Barfield soils have a brownish clayey or loamy surface layer and a clayey subsoil. The Rock outcrop consists of exposures of limestone bedrock. The moderately deep, well drained Inman soils have a brownish clayey or loamy surface layer and a clayey subsoil. They are on hilly to very hilly uplands. The very deep, well drained Harpeth soils have a brownish loamy surface layer and subsoil. They are on undulating uplands.

The soils of minor extent in this unit include the well drained Talbott and Waynesboro soils.

This unit is used mainly as pasture or woodland, although some areas are idle or cultivated.

Most areas of this unit are poorly suited to farming and urban uses, although the undulating areas of Harpeth soils are well suited to pasture, cultivated crops, and most urban uses. The depth to bedrock, the slope, and the slow permeability are limitations for many uses. These limitations are difficult to overcome.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under the heading "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Mimosa silt loam, 2 to 5 percent slopes, eroded, is a phase of the Mimosa series.

Some map units are made up of two or more major soils. These map units are called soil complexes. A *soil complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Mimosa-Rock outcrop complex, 20 to 45 percent slopes, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits-Dumps complex is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

AmB—Armour silt loam, 2 to 5 percent slopes

This soil is very deep and well drained. It is commonly on gently sloping terraces near drainageways. Individual areas range from 5 to 25 acres in size.

Typically, the surface layer and subsurface layer are dark yellowish brown silt loam about 11 inches thick. The subsoil to a depth of about 60 inches is strong brown silty clay loam that has brownish mottles.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are areas of soils that have a gravelly layer in the lower part of the profile; some areas of soils that are in small depressions and have a thick, dark surface layer and subsurface layer; and scattered small areas of soils that are moderately well drained and have a fragipan.

Most areas of the Armour soil are used for row crops. Most of the remaining areas are used as pasture.

This soil is well suited to row crops, small grain, and pasture. Crop residue management and contour farming help to control erosion and reduce the runoff rate.

This soil is well suited to woodland. Black walnut and yellow-poplar are suitable to plant for commercial production. The soil has no significant woodland management concerns.

This soil is suited to most urban uses. The low strength is a limitation on sites for local roads and streets. It can be overcome with proper engineering practices.

The capability subclass is IIe.

Ar—Arrington silt loam, occasionally flooded

This soil is very deep and well drained. It is on nearly level flood plains along creeks, rivers, and narrow drainageways. Slopes range from 0 to 2 percent. Individual areas range from 5 to 200 acres in size.

Typically, the surface layer and subsurface layer are dark brown silt loam about 31 inches thick. The subsoil to a depth of about 54 inches is dark brown silty clay loam. The underlying material to a depth of about 60 inches is dark grayish brown silty clay loam that has brownish mottles.

This soil is slightly acid or neutral. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

This soil is occasionally flooded for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of soils that have a clayey subsoil and other small areas of soils that are less than 6 feet deep over rock and are on adjacent landscapes or in slight depressions.

Most areas of the Arrington soil are used for row crops. Most of the remaining areas are used as pasture. This soil is well suited to row crops, small grain, and pasture.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The soil has no significant woodland management concerns.

This soil is not suited to most urban uses because of flooding.

The capability subclass is IIw.

BaC—Barfield-Rock outcrop complex, 5 to 20 percent slopes

This map unit consists of the shallow, well drained Barfield soil and outcrops of limestone bedrock. It is mainly on hillsides of rolling uplands. The Barfield soil and the Rock outcrop are too intricately mixed to be mapped separately at the selected scale. This map unit consists of about 65 percent Barfield soil, 20 percent Rock outcrop, and 15 percent included soils. Individual areas range from 5 to 75 acres in size.

Typically, the Barfield soil has a surface layer of very dark grayish brown silty clay loam about 4 inches thick. The upper part of the subsoil to a depth of about 10 inches is dark brown clay that has brownish mottles. The lower part to a depth of about 18 inches is brown clay that has brownish mottles. Limestone bedrock is a depth of about 18 inches.

This soil is slightly acid to mildly alkaline. Permeability is moderately slow, and the available water capacity is very low. The root zone is shallow and is difficult for plant roots to penetrate.

Typically, the Rock outcrop occurs as hard limestone bedrock. It crops out as much as 12 inches above the surface.

Included in mapping are small scattered areas of soils that are more than 20 inches deep over rock and a few small areas that have less than 10 percent rock outcrop.

Nearly all areas of this map unit are used as woodland or pasture. Most of the remaining areas are idle.

This map unit is poorly suited to pasture. Droughtiness, the Rock outcrop, the shallow rooting depth, and the slope are limitations. Selecting drought-resistant plants and controlling grazing are good pasture management practices.

This map unit is poorly suited as woodland. Eastern redcedar can be grown for use as fence posts. The seedling mortality rate is high. Windthrow is a hazard because of shallow rooting depth.

This map unit is poorly suited to most urban uses. The depth to bedrock, the shrink-swell potential, and the low strength are limitations that are difficult to overcome.

The capability subclass is VIIs.

BeB2—Bewleyville silty clay loam, 2 to 5 percent slopes, eroded

This soil is very deep and well drained. It is mainly on hillsides and hilltops of gently sloping uplands. Erosion has removed part of the original surface layer. Individual areas range from 10 to 200 acres in size.

Typically, the surface layer is brown silty clay loam about 8 inches thick. The upper part of the subsoil to a depth of about 21 inches is strong brown silty clay loam that has brownish and reddish mottles. The middle part to a depth of about 28 inches is yellowish red silty clay loam that has brownish and reddish mottles. The next part to a depth of about 35 inches is yellowish red silty clay loam that has brownish mottles. The lower part to a depth of about 60 inches is red clay that has reddish, brownish, and grayish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of

moderately well drained soils on hilltops and at heads of drainageways. Also included are small areas of severely eroded soils that have a reddish silty clay loam surface layer and are on short hillside slopes that range to 9 percent.

Most areas of the Bewleyville soil are used for row crops. Most of the remaining areas are used for pasture and hay. Strawberries and tobacco are grown in small areas. This soil is well suited to row crops, small grain, and hay and pasture (fig. 2). Minimum tillage and contour farming reduce the runoff rate and help to control erosion.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The soil has no significant woodland management concerns.

This soil is well suited to most urban uses. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IIe.

BeC2—Bewleyville silty clay loam, 5 to 12 percent slopes, eroded

This soil is very deep and well drained. It is commonly on hillsides of rolling uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is brown silty clay loam about 8 inches thick. The upper part of the subsoil to a depth of about 21 inches is strong brown silty clay loam that has brownish and reddish mottles. The middle part to a depth of about 28 inches is yellowish red silty clay loam that has brownish and reddish mottles. The next part to a

Figure 2.—An area of Bewleyville silty clay loam, 2 to 5 percent slopes, eroded. This soil is classified as prime farmland in Sumner County. It is well suited to most cultivated crops.

depth of about 35 inches is yellowish red silty clay loam that has brownish mottles. The lower part to a depth of about 60 inches is red clay that has reddish, brownish, and grayish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of moderately well drained soils at the heads of drainageways and some small areas of severely eroded soils that have a reddish silty clay loam surface layer and are on short hillsides.

Most areas of the Bewleyville soil are used for row crops. Most of the remaining areas are used as pasture. This soil is suited to row crops and small grain. It is well suited to hay and pasture. The use of cover crops in winter and a crop rotation system are conservation practices that reduce the runoff rate and help to control erosion.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The soil has no significant woodland management concerns.

This soil is well suited to most urban uses. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IIIe.

ByB—Byler silt loam, 1 to 4 percent slopes

This very deep, moderately well drained soil has a fragipan in the subsoil. It is commonly near drainageways on nearly level to gently sloping terraces. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer is brown silt loam about 9 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silt loam that has brownish mottles. The middle part to a depth of about 20 inches is yellowish brown silt loam. Below this the fragipan extends to a depth of 42 inches. The upper part of the fragipan is yellowish brown, very firm and brittle silt loam that has brownish and grayish mottles. The lower part is very firm and brittle silt loam that is mottled in shades of gray, light brownish gray, yellowish brown, and strong brown. Mottled light gray, yellowish brown, light brownish gray, and strong brown clay is below the fragipan to a depth of 60 inches.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate above the fragipan and slow in the fragipan. The available water capacity is moderate. The root zone is very deep but is somewhat restricted by the fragipan.

Included with this soil in mapping are small areas of soils that are somewhat poorly drained and have a clayey subsoil. These soils are in depressions and along drainageways. Also included are small areas of soils that are well drained or moderately well drained, do not have a fragipan, and have a clayey subsoil. These soils are along drainageways or on adjacent landscapes.

Most areas of the Byler soil are used for pasture, although some areas are used for row crops or woodland. This soil is well suited to small grain, pasture, and most row crops that require only a short-growing season. It is poorly suited to some deep-rooted crops and crops that are not water-tolerant. Wetness during rainy periods and droughtiness during dry periods are limitations.

A few areas of this soil are wooded. This soil is well suited for the production of yellow-poplar and loblolly pine. The hazard of windthrow is a management concern because of the restricted rooting depth.

This soil is poorly suited to most urban uses. Wetness and slow percolation in the fragipan are limitations on sites for septic tank absorption fields. A specially designed system may be required to overcome these limitations. Wetness is a limitation on sites for dwellings with basements. Carefully and properly sealing basement walls reduces the wetness.

The capability subclass is IIw.

CaB—Captina silt loam, 1 to 4 percent slopes

This very deep, moderately well drained soil has a fragipan in the subsoil. It is on gently sloping terraces along streams. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is brown silt loam about 7 inches thick. It has brownish mottles. The upper part of the subsoil to a depth of about 21 inches is yellowish brown silt loam that has brownish mottles. The fragipan extends from a depth of 21 to 60 inches. It is silt loam that is mottled in shades of brown and gray.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is slow in the fragipan. The available water capacity is low. The root zone is very deep but is somewhat restricted by the fragipan.

Included with this soil in mapping are small areas of somewhat poorly drained soils that are commonly in narrow bands along drainageways or in depressions; some areas of soils that do not have a fragipan and have a higher content of fragments in the upper part than the Captina soil; and some small areas of soils that are well drained, do not have a fragipan, and

have a higher content of fragments in the upper part than the Captina soil.

Most areas of the Captina soil are used for row crops. Most of the remaining areas are used as pasture. This soil is well suited to small grain, pasture, and most row crops that require only a short growing season. It is poorly suited to some deep-rooted crops and crops that are not water-tolerant. The perched water table during rainy periods and the droughtiness during dry periods are limitations.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and loblolly pine. The hazard of windthrow is a management concern because of the restricted rooting depth.

This soil is poorly suited to most urban uses. Wetness and slow percolation in the fragipan are limitations on sites for septic tank absorption fields. A specially designed system may be required to overcome these limitations. Wetness is a limitation on sites for dwellings with basements. Carefully and properly sealing basement walls overcomes this limitation.

The capability subclass is IIe.

DeD2—Dellrose gravelly silt loam, 12 to 20 percent slopes, eroded

This soil is very deep and well drained. It is on foot slopes in hilly upland areas. Erosion has removed part of the original surface layer. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 14 inches is brown gravelly silt loam that has brownish mottles. The lower part to a depth of about 60 inches is strong brown gravelly silty clay loam that has brownish mottles. Some areas of similar soils have a clay subsoil below a depth of about 40 inches.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately rapid, and the available water capacity is moderate. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of soils that are on narrow benches and are less than 40 inches deep over shale bedrock. A few small areas of included soils have gullies 2 to 8 feet wide and 1 to 3 feet deep. Other small areas of included soils have a clayey surface layer. A few outcrops of rock are in the upper edges of a few mapped areas.

Most areas of the Dellrose soil are used as pasture or woodland. This soil is poorly suited to row crops because of the hazard of erosion. If cultivated crops are grown, crop rotations should be long-term and should consist mainly of grasses and legumes. This soil is well suited to pasture and hay.

Most areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The hazard of erosion and the restricted use of equipment are management concerns because of the slope.

This soil is poorly suited to many urban uses because of the slope. This limitation can be overcome by using engineering designs that take into account the shape of the land.

The capability subclass is IVe.

DeE2—Dellrose gravelly silt loam, 20 to 40 percent slopes, eroded

This soil is very deep and well drained. It is mainly on steep upland foot slopes. Erosion has removed part of the original surface layer. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 14 inches is brown gravelly silt loam that has brownish mottles. The lower part to a depth of about 60 inches is strong brown gravelly silty clay loam that has brownish mottles.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately rapid, and the available water capacity is moderate. The root zone is very deep and is easily penetrated by plant roots. Some areas of similar soils have a clay subsoil below a depth of about 40 inches.

Included with this soil in mapping are small areas of soils that are on narrow benches and are less than 40 inches deep over shale bedrock. A few small areas of included soils have gullies 2 to 8 feet wide and 1 to 3 feet deep. Other small areas of included soils have a clayey surface layer. A few outcrops of rock are in the upper edges of a few mapped areas.

Most areas of the Dellrose soil are used as unimproved pasture or woodland. This soil is suited to pasture. Maintaining an adequate stand of grass is difficult because of the slope.

Most areas of this soil are wooded. This soil is suited to the production of yellow-poplar and black walnut. The hazard of erosion and restricted use of equipment are management concerns because of the slope.

This soil is poorly suited to most urban uses because of the slope. It is susceptible to slippage if deep cuts are made. The slope can be overcome by using engineering designs that take into account the shape of the land.

The capability subclass is VIe.

DkB2—Dickson silt loam, 2 to 5 percent slopes, eroded

This very deep, moderately well drained soil has a fragipan in the subsoil. It is on gently sloping hilltops in the uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 200 acres in size.

Typically, the surface layer is brown silt loam about 11 inches thick. The upper part of the subsoil to a depth of about 20 inches is light olive brown silt loam. The fragipan extends from a depth of 20 to 47 inches. It is yellowish brown silt loam that has reddish, brownish, and grayish mottles. Below this to a depth of about 60 inches, the subsoil is red gravelly silty clay loam that has brownish and grayish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate above the fragipan, slow in the fragipan, and moderately slow below the fragipan. The available water capacity is moderate. The root zone is very deep but is somewhat restricted by the fragipan.

Included with this soil in mapping are a few small areas of well drained soils that do not have a fragipan. These soils are commonly in narrow bands around the outer edges of mapped areas or on short slopes in the interior. Also included are a few small areas of somewhat poorly drained soils in depressions.

Most areas of the Dickson soil are used for row crops. Some areas are used for pasture and hay. This soil is well suited to row crops, small grains, and pasture and hay (fig. 3). It is limited mainly by a seasonally perched water table above the fragipan. Crops that are highly sensitive to short periods of wetness should be grown only in areas that have sufficient slopes to provide adequate surface

Figure 3.—An area of Dickson silt loam, 2 to 5 percent slopes, eroded. The wheat in this area will be followed by no-till soybeans. This soil is well suited to most cultivated crops.

drainage. Crop residue management and contour farming help to control erosion.

Few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and loblolly pine. The hazard of windthrow is a management concern because of the restricted rooting depth.

This soil is poorly suited to most urban uses. The moderately slow permeability in the fragipan and the wetness are limitations on sites for septic tank absorption fields. A specially designed system may be required to overcome these limitations. Wetness is a limitation on sites for dwellings with basements. Carefully and properly waterproofing basement walls can minimize the wetness. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IIe.

Eg—Egam silt loam, occasionally flooded

This soil is very deep and moderately well drained. It is on nearly level flood plains along major drainageways. Slopes range from 0 to 2 percent. Individual areas range from 10 to 50 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer to a depth of about 25 inches is very dark brown silty clay loam. The upper part of the subsoil to a depth of about 40 inches is very dark brown clay. The middle part to a depth of about 47 inches is dark brown clay that has brownish mottles. The lower part to a depth of about 60 inches is dark yellowish brown silty clay loam that has brownish mottles.

This soil is slightly acid or neutral throughout the profile. Permeability is moderately slow, and the available water capacity is high. The root zone is very deep. This soil is occasionally flooded for very brief periods, mostly during winter and early spring.

Included in mapping are a few areas of somewhat poorly drained soils in depressions and a few areas of soils that are along drainageways and are less than 60 inches deep over rock.

Most areas of the Egam soil are used for row crops. Most of the remaining areas are used as pasture. This soil is well suited to row crops, small grain, and hay and pasture. Flooding occurs mostly during the winter and early spring, and it rarely damages row crops.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is not suited to most urban uses because of flooding. Alternative sites should be considered.

The capability subclass is IIw.

EtB—Etowah silt loam, 2 to 5 percent slopes

This soil is very deep and well drained. It is on gently sloping terraces along drainageways. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 14 inches is dark brown silt loam that has brownish mottles. The middle part to a depth of about 30 inches is strong brown and yellowish red silty clay loam that has brownish and reddish mottles. The lower part to a depth of about 60 inches is red silty clay loam that has brownish and reddish mottles.

This soil is generally strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of moderately well drained soils that have a fragipan. These soils are in nearly level areas. Also included are small areas of well drained soils that are near drainageways and are subject to flooding.

Most areas of the Etowah soil are used for row crops. Most of the remaining areas are used for pasture. This soil is well suited to row crops, small grain, and pasture. Minimum tillage and crop residue management help to control erosion.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is well suited to most urban uses.

The capability subclass is IIe.

EtC2—Etowah silt loam, 5 to 12 percent slopes, eroded

This soil is very deep and well drained. It is on rolling terraces and foot slopes along drainageways. Individual areas range from 5 to 30 acres in size. Erosion has removed part of the original surface layer.

Typically, the surface layer is strong brown silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 30 inches is yellowish red silty clay loam. The lower part of the subsoil to a depth of about 60 inches is red silty clay loam that has brownish mottles.

The soil is generally strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of severely eroded soils that are on short slopes and have a yellowish red surface layer. Also included are small areas of well drained soils that are near drainageways and are subject to flooding.

Most areas of the Etowah soil are used for row crops. Most of the remaining areas are used as pasture or woodland. This soil is suited to row crops and is well suited to small grain and hay and pasture. Erosion is a management concern if cultivated crops are grown. The use of cover crops in winter and a crop rotation system reduce the runoff rate and help to control erosion.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is well suited to most urban uses.

The capability subclass is IIIe.

Go—Godwin silt loam, occasionally flooded

This soil is very deep and somewhat poorly drained. It is on nearly level flood plains along streams and drainageways. Slopes range from 0 to 2 percent. Individual areas range from 5 to 40 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The subsurface layer to a depth of about 26 inches is very dark brown silty clay loam that has brownish mottles. The subsoil to a depth of about 47 inches is very dark gray silty clay that has brownish mottles. The underlying material to a depth of about 60 inches is gray clay that has brownish mottles.

This soil is slightly acid or neutral. Permeability is moderately slow, and the available water capacity is high. The root zone is very deep. This soil is occasionally flooded for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are a few small areas of moderately well drained soils that have a fragipan. These soils are commonly in areas where smaller drains enter larger drainageways. Also included are a few areas of soils that are commonly along drainageways and are less than 60 inches deep over rock.

Most areas of the Godwin soil are used as pasture. A few areas are wooded, and a few are used for row crops. This soil is poorly suited to most row crops because of the seasonal high water table. Planting is often delayed, and the wetness in the fall interferes with harvesting activities. Flooding occurs mostly during winter and early spring, and it rarely damages row crops. This soil is suited to pasture if water-tolerant species are used. Grazing when the soil is wet results in compaction and poor tilth.

A few areas of this soil are wooded. This soil is well suited to bottom land hardwoods. Suitable species are yellow-poplar and loblolly pine. The restricted use of equipment and the seedling mortality rate are management concerns because of the wetness.

This soil is not suited to most urban uses because of the hazard of flooding. The moderately slow permeability, the wetness, and low strength are major limitations for some uses. Intensively planned engineering designs may be required to overcome these limitations.

The capability subclass is IIIw.

Gu—Guthrie silt loam, ponded

This very deep, poorly drained soil has a fragipan in the subsoil. It is on upland flats and in depressions. Slopes range from 0 to 2 percent. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer and subsurface layer are dark grayish brown and grayish brown silt loam about 7 inches thick. The subsoil to a depth of about 50 inches is dark grayish brown, grayish brown, and gray silt loam that has mottles. Below this is a mottled, very firm silt loam fragipan.

This soil is generally strongly acid to extremely acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate above the fragipan and slow in the fragipan. The available water capacity is high. The root zone is very deep but is somewhat restricted by the fragipan. Many areas do not have definable stream channels and are in the lowest positions on the landscape, which results in ponding mainly during winter and spring.

Included with this soil in mapping are small areas of somewhat poorly drained or moderately well drained soils that are commonly in slightly higher positions near the edges of the map unit.

Most areas of the Guthrie soil are used as woodland. Some areas are used as pasture, and a few areas are used for growing soybeans. This soil is not suited to most cultivated crops or small grain because it has a seasonal high water table and has water on the surface during the winter and spring. Most areas require surface drainage for pastures of water-tolerant grasses. Grazing when the soil is wet results in compaction and poor tilth.

Most areas of this soil are wooded. This soil is suited to woodland if trees that can tolerate wet conditions, such as sweetgum, are planted. The restricted use of equipment, the windthrow hazard, and the seedling mortality rate are management concerns caused by the seasonal wetness. Performing field operations during dry periods reduces damage to the soil. Planting vigorous seedlings on raised beds increases the survival rate.

This soil is not suited to most urban uses because of the water on the surface. This limitation is difficult to overcome, and other sites should be considered.

The capability subclass is Vw.

HaC2—Hampshire silt loam, 5 to 12 percent slopes, eroded

This soil is deep and well drained. It is mainly on hillsides and narrow ridgetops of rolling uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil to a depth of about 43 inches is strong brown clay that has brownish and reddish mottles in the lower part. The underlying material to a depth of about 49 inches is strong brown very channery clay loam that has brownish and reddish mottles. Strata of weathered limestone extend from a depth of 49 to 60 inches.

This soil is medium acid or strongly acid. Permeability is moderately slow, and the available water capacity is moderate. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are small, narrow areas of well drained to moderately well drained, deep, loamy soils that are at the base of slopes along drainageways and on ridgetops.

Most areas of the Hampshire soil are used as pasture or woodland. Some small areas are used for row crops. This soil is suited to row crops and is well suited to small grain and hay and pasture. Erosion is a management concern if cultivated crops are grown. The use of cover crops in winter and a crop rotation system reduce the runoff rate and help to control erosion.

Some areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and loblolly pine. Erosion is a hazard in the steeper areas. Maintaining cover on the forest floor reduces the hazard of erosion.

This soil is poorly suited to most urban uses. The moderately slow permeability limits the use of this soil for septic tank absorption fields. Constructing a system with additional footage in the absorption field lines helps to overcome this limitation. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable subgrade material.

The capability subclass is IIIe.

HaD2—Hampshire silt loam, 12 to 20 percent slopes, eroded

This soil is deep and well drained. It is mainly on hillsides and hilltops of hilly uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 60 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil to a depth of about 43 inches is strong brown clay that has brownish and reddish mottles in the lower part. The underlying material to a depth of about 49 inches is strong brown very channery clay loam that has brownish and reddish mottles. Strata of weathered limestone extend from a depth of 49 to 60 inches.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and the available water capacity is moderate. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are small, narrow areas of deep, loamy, well drained to moderately well drained soils along drainageways. Also included are small areas of soils that have more than 20 percent slopes and are commonly in the upper positions on the landscape. These soils are generally less than 40 inches deep over rock.

Most areas of the Hampshire soil are used as pasture. Most of the remaining areas are used as woodland. This soil is poorly suited to row crops because of the high hazard of erosion. If cultivated crops are grown, crop rotations should be long-term and should consist mainly of grasses and legumes. This soil is suited to pasture. The slope is a limitation.

Several areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant. Erosion is a hazard in the steeper areas. Maintaining cover on the forest floor reduces the hazard of erosion.

This soil is poorly suited to most urban uses. The slope and the moderately slow permeability limit the use of this soil for septic tank absorption fields. A system that conforms to the shape of the site and includes additional footage of absorption field lines can reduce these limitations. The construction of dwellings should include engineering practices that reduce the slope. The slope and the low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to overcome these limitations.

The capability subclass is IVe.

HhB2—Harpeth silt loam, 2 to 5 percent slopes, eroded

This soil is very deep and well drained. It is on undulating uplands and old high terraces. Erosion has removed part of the original surface layer. Individual areas range from 5 to more than 200 acres in size.

Typically, the surface layer is brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is strong brown and brown silt loam. The

middle part to a depth of about 35 inches is strong brown silt loam. The lower part to a depth of about 60 inches is strong brown clay loam.

This soil is generally strongly acid to slightly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of moderately well drained soils at the heads of drains and along drainageways. Also included are small areas of soils that are clayey throughout the subsoil. These soils are scattered throughout the map unit in short, sloping areas near drainageways.

Most areas of the Harpeth soil are used as pasture. Most of the remaining areas are used for row crops. This soil is well suited to row crops, small grain, and pasture. Conservation tillage and contour farming help to control erosion and reduce the runoff rate.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The soil has no significant woodland management concerns.

This soil is well suited to most urban uses. The low strength is a limitation on sites for roads and streets. This limitation can be overcome with the use of good engineering practices.

The capability subclass is IIe.

HhC2—Harpeth silt loam, 5 to 10 percent slopes, eroded

This soil is very deep and well drained. It is on rolling uplands and high terraces. Erosion has removed part of the original surface layer. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is strong brown and brown silt loam. The middle part to a depth of about 35 inches is strong brown silt loam. The lower part to a depth of about 60 inches is strong brown clay loam.

This soil is generally strongly acid to slightly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of soils that are less than 60 inches deep over rock and are clayey in places. These soils are commonly scattered throughout the map unit on narrow, short slopes along drainageways. Also included are small areas of moderately well drained soils at the heads of drains and along drainageways.

Most areas of the Harpeth soil are used as pasture. Most of the remaining areas are used for row crops. This soil is suited to most locally grown row crops. Erosion is a management concern if cultivated crops are grown. The use of cover crops in winter and a crop rotation system reduce the runoff rate and help to control erosion. This soil is well suited to pasture and hay.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is well suited to most urban uses. The low strength is a limitation on sites for local roads and streets. It can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IIIe.

HrB—Harpeth-Urban land complex, 2 to 8 percent slopes

This map unit consists of the very deep, well drained Harpeth soil and areas of Urban land in the towns of Hendersonville and Gallatin. The Harpeth soil and areas of Urban land are too intricately mixed to be separated at the selected scale. This complex consists of about 60 percent Harpeth soil, 30 percent Urban land, and 10 percent included soils. Individual areas range from 10 to 600 acres in size.

Typically, the Harpeth soil has a surface layer of brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is strong brown and brown silt loam. The middle part to a depth of about 35 inches is strong brown silt loam. The lower part to a depth of about 60 inches is strong brown clay loam.

The Harpeth soil is generally strongly acid to slightly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Typically, the Urban land consists of sites for houses, driveways, sidewalks, streets, industrial buildings, and other structures that make the identification of the soils impractical. These Urban areas presumably consisted of areas of the Harpeth soil before they were altered.

Included in mapping are small areas of poorly drained soils that are along drainageways and are occasionally flooded. Also included are areas of soils that are clayey and are less than 60 inches deep over rock.

Areas of the Harpeth soil are well suited to use as woodland. Yellow-poplar and black walnut are suitable trees for planting. The soil has no significant woodland management concerns.

The Harpeth soil is well suited to many urban uses. The low strength is a limitation on sites for local roads

and streets. It can be overcome by providing a suitable base material for the construction of road surfaces.

This map unit is in capability subclass IIe.

HuB—Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded

This soil is very deep and well drained. It is mostly in long, narrow units on undulating stream terraces and foot slopes along small permanent drainageways. Individual areas range from 5 to 40 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 17 inches is brown gravelly silt loam. The middle part to a depth of about 36 inches is dark yellowish brown gravelly silt loam. The lower part to a depth of about 55 inches is dark yellowish brown gravelly silty clay loam that has brownish mottles. The underlying material to a depth of about 60 inches is dark yellowish brown gravelly clay loam that has brownish mottles.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately rapid, and the available water capacity is moderate. The root zone is very deep and is easily penetrated by plant roots. The root zone is somewhat restricted by rock fragments.

Included in mapping are soils that are similar to the Humphreys soil but have a brown surface layer, soils that are along drainageways and are occasionally flooded, somewhat poorly drained soils that are near steep slopes at the edges of the map unit, and soils that are near drainageways and are less than 60 inches deep over rock.

Most areas of the Humphreys soil are used for pasture or hay. Very few areas are used for row crops. This soil is well suited to row crops, small grain, and hay and pasture; however the small size and long, narrow shape of the unit limit the use of equipment. Crop residue management and contour farming help to control erosion.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is not suited for many urban uses because of the flooding. Other sites should be considered.

The capability subclass is IIe.

InD2—Inman flaggy silty clay loam, 10 to 20 percent slopes, eroded

This soil is moderately deep and well drained. It is mainly on dissected hilltops and hillsides of hilly uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 200 acres in size.

Typically, the surface layer is brown flaggy silty clay loam about 6 inches thick. The subsoil to a depth of about 11 inches is yellowish brown flaggy silty clay that has brownish mottles. From a depth of 11 to 21 inches is a layer of light olive brown flaggy silty clay that has brownish mottles. Stratified, brownish weathered limestone and thin seams of mottled silty clay extend from a depth of 21 to 32 inches. Thin strata of weathered limestone are below a depth of 32 inches.

This soil is slightly acid or neutral. Permeability is moderately slow, and the available water capacity is low. The root zone is moderately deep and is difficult for plant roots to penetrate.

Included with this soil in mapping are areas of soils that are less than 20 inches deep over rock. These soils are commonly on the steeper slopes in the upper parts of the map unit.

Most areas of the Inman soil are used as pasture. Most of the remaining areas are used as woodland. This soil is suited to pasture and hay. The droughtiness, the rooting depth, and the slope are limitations. Establishing drought-resistant grasses and controlling grazing help to keep the pasture in good condition.

This soil is suited to woodland. Suitable species are loblolly pine, shortleaf pine, and black locust. Erosion is a hazard in the steeper areas. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas. The seedling mortality rate is a management concern because of soil droughtiness. Planting vigorous seedlings during optimal moisture conditions increases the survival rate.

This soil is poorly suited for most urban uses. The slope, the depth to bedrock, and the moderately slow permeability limit the use of this soil for septic tank absorption fields. A specially designed system is needed to overcome these limitations. The slope is a limitation on sites for dwellings. Designing buildings that conform to the shape of the site helps to overcome the slope. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is VIs.

InE2—Inman flaggy silty clay loam, 20 to 35 percent slopes, eroded

This soil is moderately deep and well drained. It is mostly on dissected hillsides of very hilly uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 125 acres in size.

Typically, the surface layer is brown flaggy silty clay loam about 6 inches thick. The subsoil to a depth of about 11 inches is yellowish brown flaggy silty clay that has

brownish mottles. From 11 to 21 inches is a layer of light olive brown flaggy silty clay that has brownish mottles. Stratified, brownish weathered limestone and thin seams of mottled silty clay extend from a depth of 21 to 32 inches. Thin strata of weathered limestone are below a depth of 32 inches.

This soil is slightly acid or neutral. Permeability is moderately slow, and the available water capacity is low. The root zone is moderately deep and is difficult for plant roots to penetrate.

Included with this soil in mapping are areas of soils that are less than 20 inches deep over rock. These soils are commonly on steeper slopes in the upper or lower parts of the map unit.

Most areas of the Inman soil are used as woodland. This soil is poorly suited to pasture. The droughtiness, the rooting depth, and the slope are limitations. The slope is a limitation for maintaining a suitable stand of grass. Establishing drought-resistant grasses and controlling grazing help to keep the pasture in satisfactory condition.

This soil is suited to woodland. Suitable species are loblolly pine, shortleaf pine, and black locust. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas. The seedling mortality rate is a management concern because of soil droughtiness. Planting vigorous seedlings during optimal moisture conditions increases the survival rate.

This soil is poorly suited to most urban uses. The slope, the depth to bedrock, and the moderately slow permeability limit the use of this soil for septic tank absorption fields. A specially designed system is needed to overcome these limitations. The slope is a limitation on sites for dwellings. Designing buildings that conform to the shape of the site helps to overcome the slope. Low strength is a limitation on sites for local roads and streets. It can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is VIIs.

Me—Melvin silt loam, frequently flooded

This soil is very deep and poorly drained. It is on nearly level flood plains along drainageways. Slopes range from 0 to 2 percent. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsoil to a depth of about 30 inches is light brownish gray silt loam that has brownish mottles. The underlying material to a depth of about 60 inches is light gray silt loam that has brownish mottles.

This soil is neutral to medium acid. Permeability is moderate, and the available water capacity is high. The root zone is very deep and can be penetrated by plant roots. The root zone is restricted by the seasonal high water table during prolonged wet periods. Commonly this soil is frequently flooded during winter and spring.

Included with this soil in mapping are small areas of soils that have a clayey subsoil and small areas of moderately well drained soils that are commonly around the outer edges of the map unit.

Most areas of the Melvin soil are wooded or are idle. Most of the remaining areas are used as pasture. This soil is poorly suited to row crops unless it is drained. It has fair suitability for pasture if water-tolerant grasses are used.

This soil is suited to woodland if trees that are tolerant of wet conditions, such as sweetgum, are planted. The hazard of windthrow, the restricted use of equipment, and the seedling mortality rate are management concerns caused by the seasonal wetness and flooding. Performing field operations during dry periods reduces damage to the soil. Planting vigorous seedlings on raised beds increases the survival rate.

This soil is not suited to most urban uses because of the flooding. This limitation is difficult to overcome, and other sites should be considered for these uses.

The capability subclass is IVw.

MmB2—Mimosa silt loam, 2 to 5 percent slopes, eroded

This soil is deep and well drained. It is mainly in irregularly shaped areas on hilltops of undulating uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 80 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult for roots to penetrate because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over rock and a few areas of soils that are more than 60 inches deep.

Most areas of the Mimosa soil are used as pasture. Most of the remaining areas are used for row crops or woodland. This soil is suited to row crops and small grain. Erosion is a management concern if cultivated crops are grown. Conservation tillage and contour farming reduce

the runoff rate and help to control erosion. This soil is well suited to pasture and hay, but yields are low during periods of low rainfall.

A few areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant. This soil has no significant woodland management limitations.

This soil is poorly suited to most urban uses. The slow permeability is a major limitation for septic tank absorption fields. A system that includes additional area in the absorption field minimizes this limitation. Low strength is a serious limitation on sites for local roads and streets. It can be overcome by replacing a portion of the soil with a suitable base material.

The capability subclass is IIIe.

MmC2—Mimosa silt loam, 5 to 12 percent slopes, eroded

This soil is deep and well drained. It is mainly on dissected hillsides in rolling upland areas. Erosion has removed part of the original surface layer. Individual areas range from 5 to 150 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over rock and a few areas of soils that are more than 60 inches deep.

Most areas of the Mimosa soil are used as pasture. Most of the remaining areas are used for row crops or woodland. This soil is poorly suited to row crops and small grain. Erosion is a management concern if cultivated crops are grown. Conservation practices, such as crop rotations that are long-term and consist mainly of grasses and legumes, reduce the runoff rate and help to control erosion. This soil is well suited to pasture and hay, although yields are often reduced during periods of low rainfall.

A few areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant. The soil has no significant woodland management concerns.

This soil is poorly suited to most urban uses. The slow permeability is a limitation on sites for septic tank absorption fields. Using a design that includes additional area in the absorption field minimizes this limitation. Low strength is a limitation on sites for local roads and streets. It can be overcome by replacing part of the soil with a suitable base material for the construction of road surfaces.

The capability subclass is IVe.

MmD2—Mimosa silt loam, 12 to 20 percent slopes, eroded

This soil is deep and well drained. It is on dissected hillsides in hilly upland areas. Erosion has removed part of the original surface layer. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that do not have a clayey subsoil. These soils are along drainageways in landscape positions below those of the Mimosa soil. Also included are small areas of soils that are less than 40 inches deep over rock and a few areas of rock outcrop.

Most areas of the Mimosa soil are used as pasture. Most of the remaining areas are used as woodland. This soil is suited to pasture (fig. 4). The slope hinders the operation of farm equipment, and it is a limitation for maintaining a suitable stand of grass. Production is reduced during periods of low rainfall.

A few areas of this soil are wooded. This soil is suited to woodland. Loblolly pine is a suitable tree to plant for commercial production. The hazard of erosion, the restricted use of equipment, and the seedling mortality rate are woodland management concerns. Maintaining cover on the forest floor reduces the hazard of erosion. Planting seedlings during optimal available moisture periods increases the survival rate.

This soil is poorly suited to most urban uses. The slope and the slow permeability are limitations for use as septic tank absorption fields. A system that conforms to the shape of the site and includes additional footage of absorption field lines can reduce these limitations. The

Figure 4.—An area of Mimosa silt loam, 12 to 20 percent slopes, eroded. This soil is suited to the production of livestock. Areas of Mimosa and Harpeth soils are in the background.

slope is a limitation on sites for dwellings. The construction of dwellings should include practices that reduce the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to minimize these limitations.

The capability subclass is VIe.

MmD3—Mimosa silty clay, 8 to 20 percent slopes, severely eroded

This soil is deep and well drained. It is on hillsides in hilly upland areas. Erosion has removed nearly all of the original surface layer. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is brown silty clay about 4 inches thick. Below this, from a depth of 4 to 47 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 47 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is low. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Included with this soil in mapping are soils that are less than 40 inches deep over rock and a few areas of rock outcrop.

Most areas of the Mimosa soil are used as pasture or are idle. Some areas are reverting to woodland. This soil is poorly suited to pasture. Poor tilth of the clayey surface

layer, droughtiness, and the slope make establishing and maintaining grass difficult.

Some areas of this soil are wooded. This soil is suited to woodland. Suitable species for commercial production are loblolly pine and eastern redcedar. The hazard of erosion, the restricted use of equipment, and the seedling mortality rate are woodland management concerns. Poor tilth and the soil droughtiness result in a high seedling mortality rate. Planting vigorous seedlings in early spring improves the survival rate. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas.

This soil is poorly suited to most urban uses. The slope and slow permeability are limitations for use as septic tank absorption fields. A system that conforms to the shape of the site and includes additional footage of absorption field lines can reduce these limitations. The slope is a limitation on sites for dwellings. The construction of dwellings should include practices that reduce the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to minimize these limitations.

The capability subclass is VIe.

MmE2—Mimosa silt loam, 20 to 35 percent slopes, eroded

This soil is deep and well drained. It is mainly on hillsides around knobs and on narrow hilltops in very hilly upland areas. Erosion has removed part of the original surface layer. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Included with this soil in mapping are small areas of rock outcrop and areas of soils that are less than 40 inches deep over rock. These included areas are commonly in bands around hillsides in the steeper parts of the map unit.

Most of areas of the Mimosa soil are used as pasture or woodland or are idle. This soil is poorly suited to pasture. The very hilly slopes and the droughtiness make establishing and maintaining grasses difficult.

A few areas of this soil are wooded. This soil is suited to woodland. Loblolly pine is a suitable tree to plant. The hazard of erosion and the restricted use of equipment are woodland management concerns. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas.

This soil is poorly suited to most urban uses. The slope and slow permeability are limitations for use as septic tank absorption fields. A system that conforms to the shape of the site and includes additional footage of absorption field lines can reduce these limitations. The slope is a limitation on sites for dwellings. The construction of dwellings should include practices that reduce the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to minimize these limitations.

The capability subclass is VIIe.

MnC2—Mimosa silt loam, 5 to 20 percent slopes, eroded, very rocky

This soil is deep and well drained. It is mostly on hilltops and hillsides of rolling to hilly uplands. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

Rock outcrop and limestone boulders cover about 1 to 3 percent of the surface. They extend as much as 4 inches above the soil surface. Soil depth varies over a short distance because of the rock outcrop and the boulders in the subsoil.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over bedrock. These soils are generally near areas of rock outcrop.

Nearly all areas of the Mimosa soil are used as pasture or are idle. This soil is poorly suited to pasture. The rock outcrop limits the use of farm equipment. Droughtiness, the rock outcrop, and the slope make establishing and maintaining the pasture difficult.

Very few areas of this soil are wooded. This soil is suited to the production of loblolly pine and eastern redcedar. Erosion is a hazard. Maintaining cover on the forest floor reduces the hazard of erosion.

This soil is poorly suited to most urban uses. The slow permeability is a limitation for use as septic tank absorption fields. A system that includes additional footage of absorption field lines can reduce these limitations. Low strength is a limitation on sites for local roads and streets. This limitation can be reduced by providing a suitable base material for the construction of road surfaces.

The capability subclass is VIs.

MrE—Mimosa-Rock outcrop complex, 20 to 45 percent slopes

This map unit consists of the deep, well drained Mimosa soil and outcrops of limestone bedrock. It is mainly on hillsides in very hilly upland areas. The Mimosa soil and the Rock outcrop are too intricately mixed to be mapped separately at the selected scale. This complex consists of about 60 percent Mimosa soil, 30 percent Rock outcrop, and 10 percent included soils. Individual areas range from 10 to 150 acres or more in size.

Typically, the Mimosa soil has a surface layer of dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Typically, the Rock outcrop occurs as hard limestone bedrock in bands along the contour around hillsides. These bands of Rock outcrop are as much as 20 feet wide and can extend from a few inches to 3 or 4 feet above the surface. Some outcrops may extend as much as 10 feet above the surface and occur as bedrock escarpments near the top of slopes. Limestone flagstones and boulders from 1 foot to more than 15 feet across are also on the surface. They are commonly below the bedrock escarpments.

Included with this soil in mapping are small areas that have more than 50 percent rock outcrop, some small areas of soils that are less than 40 inches deep over bedrock and are generally near areas of rock outcrop, and areas of severely eroded soils.

Most areas of this map unit are used as pasture or woodland. This map unit is poorly suited to pasture. The slope and the Rock outcrop make establishing and maintaining the pasture difficult.

Some areas of this map unit are used as woodland. This map unit is suited to the production of loblolly pine and eastern redcedar. The hazard of erosion and the restricted use of equipment are woodland management concerns. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas.

This map unit is poorly suited to most urban uses. The slope and slow permeability are limitations for use as septic tank absorption fields. A system that conforms to the shape of the site and includes additional footage of absorption field lines can reduce these limitations. The slope is a limitation on sites for dwellings. The construction of dwellings should include practices that reduce the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to minimize these limitations.

This map unit is in capability subclass VIIs.

MuC—Mimosa-Urban land complex, 5 to 12 percent slopes

This map unit consists of the deep, well drained Mimosa soil and areas of Urban land. It is mainly on hillsides of rolling uplands in the cities of Hendersonville and Gallatin. The Mimosa soil and areas of Urban land are so intricately mixed that separation was not practical at the scale selected for mapping. This complex consists of about 50 percent Mimosa soil, 40 percent Urban land, and 10 percent included soils. Individual areas range from 50 to 200 acres in size.

Typically, the Mimosa soil has a surface layer of dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 15 inches is yellowish brown silty clay. Below this, from a depth of 15 to 55 inches, the subsoil and substratum are yellowish brown clay that has brownish and grayish mottles in the lower part. Limestone bedrock is at a depth of 55 inches.

The soil is generally very strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is slow, and the available water capacity is moderate. The root zone is deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

The Urban land consists mostly of sites for houses, driveways, streets, parking lots, public and industrial buildings, and other structures. The areas of Urban land presumably consisted of Mimosa soils before they were altered for urban development.

Included in mapping are small areas of well drained to poorly drained soils that are along drainageways and are subject to flooding. Also included are areas of soils that are less than 40 inches deep over rock.

The Mimosa soil is poorly suited to most urban uses. The slow permeability is a limitation for use as septic tank absorption fields. A system that includes additional footage of absorption field lines can reduce these limitations. Low strength is a limitation on sites for local roads and streets. This limitation can be reduced by providing a suitable base material for the construction of road surfaces.

Areas of the Mimosa soil that are not used for urban development are suited to growing loblolly pine.

This map unit is in capability subclass IVe.

MvB2—Mountview silt loam, 2 to 5 percent slopes, eroded

This soil is very deep and well drained. It is mainly on broad ridgetops of gently sloping uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is yellowish brown silt loam about 6 inches thick. The upper part of the subsoil to a depth of about 29 inches is yellowish brown, strong brown, and yellowish red silt loam and silty clay loam that have brownish mottles. The lower part of the subsoil to a depth of about 60 inches is yellowish red and red silty clay and clay that have brownish and reddish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is very deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of moderately well drained to somewhat poorly drained soils that have a fragipan.

Most areas of the Mountview soil are used for row crops. Most of the remaining areas are used as pasture and woodland. This soil is well suited to row crops, small grain, and pasture. Crop residue management and contour farming increase the infiltration rate and help to control erosion.

Some areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is suited to most urban uses. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IIe.

MvC2—Mountview silt loam, 5 to 12 percent slopes, eroded

This soil is very deep and well drained. It is mainly on hillsides and hilltops of rolling uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is yellowish brown silt loam about 6 inches thick. The upper part of the subsoil to a depth of about 29 inches is yellowish brown, strong brown, and yellowish red silt loam and silty clay loam that have brownish mottles. The lower part of the subsoil to a depth of about 60 inches is yellowish red and red silty clay and clay that have brownish and reddish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of moderately well drained to somewhat poorly drained soils that have a fragipan.

Most areas of the Mountview soil are used for row crops. Most of the remaining areas are used as pasture or woodland. This soil is suited to row crops and small grain. It is well suited to pasture. Erosion is a hazard if row crops are grown. Minimum tillage and the use of cover crops in winter reduce the runoff rate and help to control erosion.

Some areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is suited to most urban uses. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IIIe.

NeB2—Nesbitt silt loam, 2 to 6 percent slopes, eroded

This soil is very deep and moderately well drained. It is mainly on broad hilltops of gently sloping uplands. Erosion has removed part of the original surface layer. Individual areas range from 8 to 125 acres in size.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 11 inches is brown silt loam that has brownish mottles. The middle part to a depth of about 24 inches is yellowish brown silt loam that has brownish mottles. The next part to a depth of about 35 inches is yellowish brown silt loam that has brownish and grayish

mottles. It is somewhat brittle. The lower part of the subsoil to a depth of about 60 inches is yellowish red silty clay loam that has brownish and grayish mottles. It is somewhat brittle.

This soil is generally medium acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of moderately well drained soils that have a fragipan. These soils commonly are in slight depressions in the upper part of the map unit.

Most areas of the Nesbitt soil are wooded. The remaining areas are used for pasture or row crops. This soil is well suited to row crops, small grain, and pasture. A system of conservation tillage, contour farming, and crop residue management help to control erosion and reduce the runoff rate.

Several areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The soil has no significant woodland management concerns.

This soil is suited to some urban uses. Slow percolation and wetness are limitations on sites for septic tank absorption fields. A specially designed system may be required to overcome the limitations. Wetness is a limitation on sites for dwellings with basements. Carefully and properly sealing basement walls reduces this limitation. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable base material for the construction of roads.

The capability subclass is IIe.

No—Nolin silt loam, occasionally flooded

This soil is very deep and well drained. It is on nearly level flood plains along creeks and rivers and along narrow drainageways. Slopes range from 0 to 2 percent. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is brown silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 28 inches is dark yellowish brown silt loam that has brownish mottles. The lower part to a depth of about 60 inches is dark brown silt loam.

This soil is medium acid to neutral throughout the profile. Permeability is moderate, and the available water capacity is high. The root zone is deep and is easily penetrated by plant roots. This soil is occasionally flooded for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of soils that are scattered throughout the map unit. The content of chert in the upper 40 inches of these soils is 5 to 25 percent, by volume.

Most areas of the Nolin soil are used for row crops. Most of the remaining areas are used as pasture or woodland. This soil is well suited to row crops and pasture. Flooding occurs mostly during winter and early spring, and it rarely damages the row crops.

A few areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is not suited to most urban uses because of the flooding. Alternative sites should be considered.

The capability subclass is IIw.

Ob—Ocana gravelly silt loam, occasionally flooded

This soil is very deep and well drained. It is on flood plains along drainageways. Slopes range from 0 to 2 percent. Individual areas range from 5 to 40 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 9 inches thick. The upper part of the subsoil to a depth of about 18 inches is dark yellowish brown gravelly silt loam. The lower part to a depth of about 25 inches is brown gravelly silt loam that has brownish mottles. A buried layer of dark brown gravelly silt loam extends from a depth of 25 to 30 inches. The underlying material to a depth of about 60 inches is brown gravelly silt loam that has brownish mottles.

This soil is medium acid to neutral. Permeability is moderately rapid, and the available water capacity is moderate to low. The root zone is very deep and is easily penetrated by plant roots. This soil is occasionally flooded for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of soils that contain only a few pebbles and some small areas of soils that are less than 40 inches deep over rock.

Most areas of the Ocana soil are used as pasture. Most of the remaining areas are used as woodland. This soil is poorly suited to row crops and small grain because the long, narrow shape of the unit limits the use of equipment. This soil is suited to pasture, but production is low during dry periods because the soil is somewhat droughty. Although this soil is occasionally flooded, the flooding is not a serious limitation for farming.

Many areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. This soil has no significant woodland management concerns.

This soil is not suited to most urban uses because of flooding. Alternative sites should be considered.

The capability subclass is IIs.

Oc—Ocana gravelly silt loam, bedrock substratum, occasionally flooded

This soil is deep and well drained. It is on flood plains along drainageways. Slopes range from 0 to 2 percent. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 9 inches thick. The upper part of the subsoil to a depth of about 18 inches is dark yellowish brown gravelly silt loam. The lower part to a depth of about 25 inches is brown gravelly silt loam that has brownish mottles. A buried layer of dark brown gravelly silt loam extends from a depth of 25 to 30 inches. The underlying material to a depth of about 48 inches is brown gravelly silt loam that has brownish mottles. Hard limestone rock is at a depth of about 48 inches.

This soil is medium acid to neutral. Permeability is moderately rapid, and the available water capacity is moderate to low. The root zone is deep and is easily penetrated by plant roots. This soil is occasionally flooded for very brief periods, mostly during winter and early spring.

Included with this soil in mapping are small areas of soils that contain only a few pebbles and some small areas of soils that are less than 40 inches deep over rock.

Most areas of the Ocana soil are used as pasture. Most of the remaining areas are used as woodland. This soil is poorly suited to row crops and small grain because the long, narrow shape of the unit limits the use of equipment. This soil is suited to pasture, but production is low during dry periods because the soil is somewhat droughty. Although this soil is occasionally flooded, the flooding is not a serious limitation for farming.

Many areas of this soil are wooded. This soil is well suited to woodland. Suitable species are yellow-poplar and black walnut. The soil has no significant woodland management concerns.

This soil is not suited to most urban uses because of flooding. Alternative sites should be considered.

The capability subclass is IIs.

Pd—Pits-Dumps complex

This map unit consists of limestone quarries, excavations, and fill material. Most areas of this map unit are near the urban areas of Gallatin and Hendersonville. Individual areas range from 5 to 100 acres in size.

These areas are in active use or are idle and have no established vegetation. The establishment of vegetation requires major reclamation efforts, which commonly involve hauling soil material from another site.

This map unit is not assigned a capability subclass.

SeC2—Sengtown gravelly silt loam, 5 to 12 percent slopes, eroded

This soil is very deep and well drained. It is commonly on hillsides and ridgetops of rolling uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer and subsurface layer are brown and yellowish brown gravelly silt loam about 11 inches thick. The upper part of the subsoil to a depth of about 16 inches is strong brown gravelly silty clay loam that has brownish and reddish mottles. Below this to a depth of about 60 inches the subsoil is yellowish red and red gravelly clay that has brownish, yellowish, and reddish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of gently sloping soils on ridgetops. These soils are not cherty, and the texture is silt loam in the upper foot or two of the subsoil. Also included are a few small areas of soils that contain more than 35 percent chert fragments throughout the profile. Most areas have a few severely eroded spots of included soils that have a reddish, cherty surface layer of silty clay loam.

Most areas of the Sengtown soil are used as pasture. Only a small acreage is used as cropland. The soil is suited to row crops and is well suited to pasture. Erosion is a hazard if cultivated crops are grown. The use of cover crops in winter and a crop rotation system reduce the runoff rate and help to control erosion. The production of pasture and hay is low during dry periods because the soil is somewhat droughty.

A few small areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable species to plant. The soil has no significant woodland management concerns.

This soil is suited to many urban uses. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable base material for the construction of roads.

The capability subclass is IIIe.

SeD2—Sengtown gravelly silt loam, 12 to 20 percent slopes, eroded

This soil is very deep and well drained. It is commonly on hillsides of hilly uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer and subsurface layer are brown and yellowish brown gravelly silt loam about 11 inches thick. The upper part of the subsoil to a depth of about 16 inches is strong brown gravelly silty clay loam that has brownish and reddish mottles. Below this to a depth of about 60 inches, the subsoil is yellowish red and red gravelly clay that has brownish, yellowish, and reddish mottles.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. The root zone is very deep, but the lower part is somewhat difficult to penetrate because of the firm subsoil.

Included with this soil in mapping are a few small areas of soils that are commonly at the heads of drains and in less sloping areas. These soils are moderately well drained and have a fragipan. Also included are a few small areas of limestone rock outcrop. Most mapped areas have a few places of eroded soils that have a reddish surface layer of gravelly silty clay loam.

Most areas of the Sengtown soil are used as pasture or woodland. Only a small acreage is used as cropland. The soil is poorly suited to row crops because of the hazard of erosion. If cultivated crops are grown, crop rotations should be long-term and should consist mainly of grasses and legumes. This soil is suited to pasture. The slope is a limitation for maintaining an adequate stand of grass.

Many small areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant. The hazard of erosion and the restricted use of equipment are woodland management concerns. These limitations are easily overcome with the application of good woodland practices.

This soil is suited to some urban uses. The slope is a limitation for use as septic tank absorption fields. A system that conforms to the shape of the site can reduce these limitations. The construction of dwellings should include engineering practices that reduce the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to overcome these limitations.

The capability subclass is IVe.

SeE2—Sengtown gravelly silt loam, 20 to 35 percent slopes, eroded

This soil is very deep and well drained. It is on steep hillsides in the uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 50 acres in size.

Typically, the surface layer and subsurface layer are brown and yellowish brown gravelly silt loam about 11 inches thick. The upper part of the subsoil to a depth of about 16 inches is strong brown gravelly silty clay loam that has brownish and reddish mottles. Below this to a depth of about 60 inches, the subsoil is yellowish red and red gravelly clay that has brownish, yellowish, and reddish mottles.

This soil is generally very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. The root zone is very deep, but the lower part is somewhat difficult to penetrate because of the firm subsoil.

Included with this soil in mapping are small areas of deep soils that do not have a clayey subsoil. These soils are commonly in narrow colluvial areas on footslopes. Also included are a few small areas of rock outcrop.

Most areas of the Sengtown soil are wooded, and a few areas are used as pasture. This soil is not suited to row crops because the hazard of erosion is high. It is suited to pasture. The slope hinders the operation of farm equipment and is a limitation for maintaining a suitable stand of grass. Production is low during periods of low rainfall because the soil is somewhat droughty.

Many areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant. The hazard of erosion and the restricted use of equipment are woodland management concerns. These limitations are easily overcome with the application of good woodland practices.

This soil is poorly suited to most urban uses. The slope is a limitation for use as septic tank absorption fields. A system that conforms to the shape of the site can reduce these limitations. The construction of dwellings should include engineering practices that reduce the slope. The slope and low strength are limitations on sites for local roads and streets. Designing roads on the contour and using a suitable subgrade material help to minimize these limitations.

The capability subclass is VIe.

Sf—Slickens

This map unit consists of specially constructed basins that contain fine-textured ash material. This material is a by-product of burning coal to generate electricity. Areas of this map unit are in active use. The material is not useful for growing plants, and the establishment of vegetation is not feasible. This map unit is not assigned to interpretative groupings.

SgC2—Sugargrove gravelly silt loam, 5 to 12 percent slopes, eroded

This soil is deep and well drained. It is commonly on the narrow, winding shoulders of broad hilltops and hillsides on rolling uplands. Erosion has removed part of the original surface layer. Individual areas range from 5 to 75 acres in size.

Typically, the surface layer is brown gravelly silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 13 inches is yellowish brown gravelly silt loam. The next part to a depth of about 17 inches is yellowish brown gravelly silty clay loam. The next part to a depth of about 32 inches is yellowish brown gravelly silty clay loam that has brownish mottles. Below this to a depth of about 41 inches is yellowish brown very gravelly silty clay that has mottles. The substratum to a depth of about 49 inches is fractured and weathered bedrock. Hard bedrock is at a depth of about 49 inches.

This soil is generally very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate or moderately rapid, and the available water capacity is low. The root zone is moderately deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of soils that are clayey and are more than 6 feet deep over rock. Also included are small areas of moderately well drained soils on concave slopes. These soils have a fragipan.

Most areas of the Sugargrove soil are used as pasture. Most of the remaining areas are used as woodland, and a few areas are used for row crops. This soil is poorly suited to cultivated crops because of the hazard of erosion and the droughtiness. The use of cover crops in winter and a crop rotation system reduce the runoff rate and help to control erosion. This soil is suited to pasture and hay, but yields are low during dry periods.

Some areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant. The soil has no significant woodland management concerns.

This soil is suited many urban uses.

The capability subclass is IIIe.

SgD2—Sugargrove gravelly silt loam, 12 to 20 percent slopes, eroded

This soil is deep and well drained. It is on narrow, winding shoulders below the nearly level hilltops of hilly uplands. Erosion has removed part of the original surface layer. Individual areas range from 10 to 200 acres in size.

Typically, the surface layer is brown gravelly silt loam about 7 inches thick. The upper part of the subsoil to a depth of about 13 inches is yellowish brown gravelly silt loam. The next part to a depth of about 17 inches is yellowish brown gravelly silty clay loam. The next part to a depth of about 32 inches is yellowish brown gravelly silty clay loam that has brownish mottles. Below this to a depth of about 41 inches is yellowish brown very gravelly silty clay that has mottles. The substratum to a depth of about 49 inches is fractured and weathered bedrock. Hard bedrock is at a depth of about 49 inches.

This soil is generally very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate or moderately rapid, and the available water capacity is low. The root zone is moderately deep and is easily penetrated by plant roots. Water moves along the surface of the bedrock during wet seasons.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over rock. Also included are small areas of very gravelly, loamy soils along small, narrow drainageways.

Most areas of the Sugargrove soil are used as pasture. Most of the remaining areas are used as woodland, and a few areas of this soil are used for row crops. This soil is poorly suited to cultivated crops because of the hazard of erosion and the droughtiness. If cultivated crops are grown, crop rotations should be long-term and should consist mainly of grasses and legumes. This soil is suited to pasture and hay, but yields are low during dry periods.

Many areas of this soil are wooded. This soil is well suited to woodland. Loblolly pine is a suitable tree to plant for commercial production. This soil has no significant woodland management concerns.

This soil is suited to some urban uses. The slope is a limitation for use as septic tank absorption fields. A system that conforms to the shape of the site can reduce these limitations. The construction of dwellings should include engineering practices that reduce the slope. The slope is a limitation on sites for local roads and streets. Designing roads on the contour helps to overcome the slope.

The capability subclass is IVe.

SuD—Sulphura channery silt loam, 10 to 25 percent slopes

This soil is moderately deep and somewhat excessively drained. It is mainly on narrow, winding hilltops and hillsides of hilly uplands. Individual areas range from 5 to 40 acres in size.

Typically, the surface layer is dark brown channery silt loam about 3 inches thick. The subsoil to a depth of about 27 inches is yellowish brown very channery silt loam. Limestone bedrock is at a depth of about 27 inches.

This soil is strongly acid or medium acid. Permeability is moderately rapid, and the available water capacity is

low. The root zone is moderately deep and is somewhat restricted by rock fragments.

Included with this soil in mapping are small areas of soils that are similar to the Sulphura soil but are less than 20 inches deep over rock. Commonly, these soils are on the upper part of steep hillsides and on steep slopes near drainageways. Also included are small areas of soils that are more than 40 inches deep over rock and that contain fewer fragments and more clay. These soils are on the wider parts of ridgetops.

A few areas of the Sulphura soil are used as pasture. This soil is poorly suited to pasture because of the slope, droughtiness, and coarse fragments in the surface layer.

Most areas of this soil are wooded. This soil is suited to woodland. Eastern redcedar is a suitable species to plant. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas. The seedling mortality rate is a management concern because of the soil droughtiness. Planting seedlings during optimal available moisture periods increases the survival rate. The restricted rooting depth results in a hazard of windthrow. Management that promotes an uneven-aged stand reduces the windthrow hazard.

This soil is poorly suited to urban uses. The depth to bedrock is a limitation for septic tank absorption fields and dwellings with basements. Special designs and construction practices are necessary to reduce this limitation. The construction of dwellings should include engineering practices that reduce the slope. The slope is a limitation on sites for local roads and streets. Designing roads on the contour helps to overcome these limitations.

The capability subclass is VIs.

SUF—Sulphura channery silt loam, 25 to 65 percent slopes

This soil is moderately deep and somewhat excessively drained. It is on hillsides and along major drainageways of very hilly uplands. Individual areas range from 10 to more than 200 acres in size.

Typically, the surface layer is dark brown channery silt loam about 3 inches thick. The subsoil to a depth of about 27 inches is yellowish brown very channery silt loam. Limestone bedrock is at a depth of about 27 inches.

This soil is strongly acid or medium acid. Permeability is moderately rapid, and the available water capacity is low. The root zone is moderately deep and is somewhat restricted by rock fragments.

Included with this soil in mapping are small areas of soils that are similar to the Sulphura soil but are less than 20 inches deep over rock. These soils are commonly on the upper part of steep hillsides and on slopes near drainageways. Bedrock may be exposed in a few very small areas of soils that have very steep slopes. Also included are soils that are similar to the Sulphura soil but are slightly more than 40 inches deep over rock. These soils are commonly on foot slopes and benches and in coves. The upper part of these soils formed in colluvium from the higher areas.

A small acreage of the Sulphura soil is used as pasture. This soil is very poorly suited to pasture because of the slope, droughtiness, and coarse fragments in the surface layer.

Most areas of this soil are wooded. This soil is poorly suited to woodland mainly because of the slope and the restricted rooting depth. Small landslides and soil creep occur in most areas of this map unit (fig. 5). Eastern redcedar is a suitable tree to plant. Maintaining cover on the forest floor reduces the hazard of erosion. The safe operation of equipment is a management concern in the steeper areas. The seedling mortality rate is a management concern because of the soil droughtiness. Planting seedlings during optimal available moisture periods increases the survival rate. The restricted rooting depth results in a hazard of windthrow. Management that promotes an uneven-aged stand reduces the windthrow hazard.

This soil is generally not suited to urban uses because of the slope and the depth to bedrock. Alternative sites should be considered.

The capability subclass is VIIs.

Ta—Taft silt loam

This very deep, somewhat poorly drained soil has a fragipan in the subsoil. It is on nearly level uplands and stream terraces. Slopes range from 0 to 2 percent. Individual areas range from 5 to 40 acres in size.

Typically, the surface layer is brown silt loam about 8 inches thick. The upper part of the subsoil to a depth of about 23 inches is light olive brown silt loam that has brownish and grayish mottles. The upper part of the fragipan to a depth of about 30 inches is light olive brown silt loam that has grayish and brownish mottles. The lower part of the fragipan to a depth of about 60 inches is mottled light olive brown, gray, and yellowish brown silty clay loam.

This soil is generally strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate in the upper part of the soil and slow in the fragipan. The available water capacity is moderate. The root zone is very deep, but the fragipan restricts penetration by plant roots.

Included with this soil in mapping are small areas of poorly drained soils. These soils are in the slightly lower

Figure 5.—An area of Sulphura channery silt loam, 25 to 65 percent slopes. This soil has severe limitations for most uses because of the slope. The curvature of some of the trees is a result of soil creep.

areas. Also included are small areas of well drained or moderately well drained soils that do not have a fragipan. These soils are mostly along drainageways.

Most areas of the Taft soil are used for pasture or row crops. This soil is well suited to row crops and pasture if water-tolerant species are used. Excess water in the soil delays seedbed preparation and harvesting. Grazing when the soil is wet results in compaction and poor tilth.

A few areas of this soil are wooded. This soil is suited to the production of loblolly pine. The restricted use of equipment, the windthrow hazard, and the seedling mortality rate are management concerns caused by the seasonal wetness. Performing field operations during dry periods reduces damage to the soil. Planting vigorous seedlings on raised beds increases the survival rate. Management that promotes an uneven-aged stand of trees reduces the windthrow hazard.

This soil is poorly suited to most urban uses. Wetness and slow percolation in the fragipan are limitations on sites for septic tank absorption fields. A specially designed system may be necessary to overcome the limitations. Wetness is a limitation on sites for dwellings with basements. Carefully and properly sealing basement walls reduces this limitation.

The capability subclass is IIIw.

TbC—Talbott silt loam, 3 to 10 percent slopes, rocky

This soil is moderately deep and well drained. It is mainly on low hills of gently rolling uplands. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is brown silt loam about 5 inches thick. The upper part of the subsoil to a depth of about 12 inches is yellowish red clay that has brownish mottles. The lower part to a depth of about 30 inches is red clay that has reddish and brownish mottles. Limestone bedrock is at a depth of about 30 inches. This soil has outcrops of rock and boulders of limestone that extend as much as 12 inches or more above the surface.

This soil is generally strongly acid or medium acid, but the surface layer is less acid in areas that have been limed. Permeability is moderately slow, and the available water capacity is low. The root zone is moderately deep, but the lower part is somewhat difficult to penetrate because of the very firm subsoil.

Included with this soil in mapping are areas of soils that are less than 20 inches deep over rock. These soils are commonly in rocky areas. Also included are very small areas, scattered throughout the map unit, that contain more than 10 percent rock outcrop and some areas of soils that are more than 40 inches deep over rock.

Most areas of the Talbott soil are used as pasture or are idle and are reverting to woodland consisting of eastern redcedar. This soil is poorly suited to row crops because the rockiness restricts the use of equipment. The soil is droughty during periods of low rainfall. This soil is suited to pasture, but the rock outcrops interfere with the establishment and maintenance of pastures.

A few areas of this soil are wooded. This soil is suited to woodland. Loblolly pine and eastern redcedar are suitable trees to plant. The soil has no significant woodland management concerns.

This soil is poorly suited to most urban uses. The depth to bedrock and the moderately slow permeability are limitations for use as septic tank absorption fields. A specially designed system is necessary to reduce these limitations. The depth to bedrock is a limitation on sites for dwellings with basements. Low strength is a limitation on sites for local roads and streets. This limitation can be overcome by providing a suitable base material for the construction of road surfaces.

The capability subclass is IVs.

TvB—Tarklin gravelly silt loam, 2 to 6 percent slopes

This very deep, moderately well drained soil has a fragipan in the subsoil. It is gently sloping and is mainly on toe slopes and terraces. Individual areas range from 5 to 35 acres in size.

Typically, the surface layer is brown gravelly silt loam about 8 inches thick. The subsoil to a depth of about 20 inches is yellowish brown gravelly silt loam. Below this to a depth of about 46 inches is a fragipan of pale brown, very firm and brittle gravelly silt loam that has brownish and grayish mottles. The underlying material to a depth of about 60 inches is mottled very gravelly silt loam.

This soil is generally extremely acid to strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate above the fragipan, slow in the fragipan, and moderate or moderately rapid below the fragipan. The available water capacity is low. The root zone is very deep but is severely restricted by the fragipan.

Included with this soil in mapping are small areas of soils that are less than 40 inches deep over rock and some areas of well drained to moderately well drained soils along drainageways.

Most areas of the Tarklin soil are used for pasture and hay. Most of the remaining areas are used for row crops. This soil is well suited to pasture and hay, small grain, and row crops that require only a short growing season. Because of the seasonal wetness, the soil is poorly suited to most deep-rooted crops and crops that need to be planted in early spring. Wetness during rainy periods and droughtiness during dry periods are limitations.

A few areas of this soil are wooded. This soil is suited to woodland. Suitable species are yellow-poplar and loblolly pine. The soil has no significant woodland management concerns.

This soil is poorly suited to most urban uses. Wetness and slow percolation in the fragipan are limitations on sites for septic tank absorption fields. A specially designed system may be necessary to overcome the limitations. Wetness is a limitation on sites for dwellings with basements. Carefully and properly sealing basement walls can help to overcome this limitation.

The capability subclass is IIe.

UD—Udorthents, 2 to 8 percent slopes

This map unit consists of excavated sites. Areas of this map unit are adjacent to Old Hickory Lake at the Tennessee Valley Authority steam plant and near the towns of Gallatin and Hendersonville.

The excavated soil material ranges in texture from silt loam to clay. The content of rock fragments is variable. The fragments range in size from gravel to huge boulders, and the thickness of cuts and fills is highly variable. Some areas are covered by buildings and coal piles. The coal is used to operate the steam plant. Some

areas are used as landfills, but others have been abandoned.

Reaction, permeability, and the available water capacity are variable.

Included in mapping are a few small areas of moderately deep to deep, undisturbed soils that are commonly around the edges of the map unit. Also included are a few areas of soils that have slopes of more than 8 percent.

The suitability of this map unit for various uses ranges from not suited to good. This unit is not assigned to any interpretative groupings.

WaC2—Waynesboro clay loam, 5 to 12 percent slopes, eroded

This soil is very deep and well drained. It is mainly on hilltops and hillsides of rolling uplands. Erosion has removed part of the original surface layer. Individual areas range from 10 to 150 acres in size.

Typically, the surface layer is brown clay loam about 8 inches thick. The subsoil to a depth of about 60 inches is yellowish red and red clay loam and clay that have reddish and brownish mottles in the lower part.

This soil is generally very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of extremely gravelly soils and small areas of well drained, loamy soils that are in depressions and along drainageways.

Most areas of the Waynesboro soil are used for pasture or row crops. The remaining areas are used as woodland. This soil is suited to row crops, but the hazard of erosion is high. The use of cover crops in winter and a crop rotation system reduce the runoff rate and help to control erosion. The soil is well suited to hay and pasture.

A few areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar is a suitable tree to plant. This soil has no significant woodland management concerns.

This soil is well suited to many urban uses.

The capability subclass is IIIe.

WaD2—Waynesboro clay loam, 12 to 20 percent slopes, eroded

This soil is very deep and well drained. It is mainly on hillsides of hilly uplands near Old Hickory Lake. Erosion has removed part of the original surface layer. Individual areas range from 10 to 50 acres in size.

Typically, the surface layer is dark brown clay loam about 8 inches thick. The subsoil to a depth of about 60 inches is yellowish red and red clay loam and clay.

This soil is generally very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. Permeability is moderate, and the available water capacity is high. The root zone is deep and is easily penetrated by plant roots.

Included with this soil in mapping are small areas of extremely gravelly soils and small areas of well drained, loamy soils that are in depressions and along drainageways.

Most areas of the Waynesboro soil are used as pasture. The remaining areas are used as woodland or are idle. This soil is poorly suited to row crops because of the hazard of erosion. If cultivated crops are grown, crop rotations should be long-term and should consist mainly of grasses and legumes. This soil is well suited to pasture and hay.

Several areas of this soil are wooded. This soil is well suited to woodland. Yellow-poplar is a suitable tree to plant. The soil has no significant woodland management concerns.

This soil is suited to many urban uses. The slope is a limitation for use as septic tank absorption fields. A system that conforms to the shape of the site can reduce these limitations. The construction of dwellings should include engineering practices that reduce the slope. The slope is a limitation on sites for local roads and streets. Designing roads on the contour helps to overcome the slope.

The capability subclass is IVe.

Prime Farmland

In this section, prime farmland is defined. The soils in Sumner County that are considered prime farmland are listed in table 5.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

The map units are considered prime farmland are listed in table 5. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified, the system of land capability classification used by the Natural Resources Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1982, Sumner County contained about 40,500 acres of row crops and 148,000 acres of pasture and hay. Soybeans, corn, and tobacco (types 31, 35, and 22) are the row crops commonly grown. The acreage of soybeans has increased significantly the past few years. In 1975, approximately 4,000 acres of soybeans were grown. In 1982, approximately 22,000 acres were grown. Strawberries are the dominant fruit crop grown commercially. Most pastures consist of a mixture of tall fescue and white clover.

Although many of the soils in Sumner County are suited to the row crops that are commonly grown in the area, some are not. For example, many commercial vegetable crops grow poorly in areas of soils that have a clay subsurface layer, such as Mimosa and Barfield soils. Most of the soils in Sumner County require applications of lime, fertilizer, or both. The necessary amount depends upon the pH level of the soil and the natural content of plant nutrients as determined by laboratory analyses of soil samples, the needs of the crops, and the yields desired. The Cooperative Agricultural Extension Service operates a soil testing laboratory as a service to land owners and operators. By having a laboratory analysis of the soils performed, the kind and amounts of fertilizer and the amounts of lime needed can be determined.

Most of the soils in Sumner County have a low content of organic matter. Organic matter is an important source of nitrogen for crops. It also increases the rate of water infiltration and the available moisture capacity, improves soil structure, reduces surface crusting, reduces soil losses from erosion, and promotes good tilth. Although it is not possible to build up the organic matter content to a high level because of the climatic conditions in the county, it is important to return organic material to the soil by adding farm manure, leaving plant residue on the surface,

growing sod crops, and incorporating cover crops and green manure crops in the soil.

All of the cultivated soils that are gently sloping or steeper are subject to erosion. Soil erosion reduces the productivity of the soils. If the surface layer is lost through erosion, most of the available plant nutrients and the organic matter also are lost. Soils that have a clayey subsoil, such as Mimosa soils, particularly require protection from erosion. In many areas, erosion results in the pollution of streams by sediments, nutrients, and pesticides. Controlling erosion minimizes such pollution and thus improves the water quality.

A cropping system that keeps a plant cover on the soil for extended periods reduces erosion and maintains the productive capacity of the soils. Including grass and legume forage crops in the cropping system helps to control erosion on sloping land, provides nitrogen to plants, and improves soil tilth for subsequent crops.

Reduced tillage practices, terraces, diversions, contour farming, stripcropping, and a cropping system that rotates grass and legumes or close-growing crops with row crops help to control erosion in areas of cropland.

Terraces and diversions reduce the length of slope and conduct runoff water to stabilized outlets, thus reducing the hazard of erosion. They are most practical on deep, well drained soils that have uniform, regular slopes, such as Harpeth and Bewleyville soils.

Contour farming is best suited to soils that have relatively smooth, uniform slopes, such as Harpeth, Bewleyville, and Dickson soils.

Pasture helps to control erosion on most soils. A high level of pasture management includes applying lime and fertilizers, controlling grazing, using adapted plants in the pasture mixture, and using other practices that maintain ground cover and forage for livestock. Grazing is controlled by rotating the livestock from one pasture to another to allow a regrowth period for the pasture plants.

A single management system or a combination of management systems can be equally effective on the same soil. A local representative of the Natural Resources Conservation Service can provide assistance in planning an effective combination of management practices.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w,* or *s,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w, s,* or *c*.

Woodland Management and Productivity

Joesph H. Paugh, forester, Natural Resources Conservation Service, helped to prepare this section.

Most of Sumner County was once covered by deciduous forest. As the area was settled, the forests were cut and most of the areas that could be cultivated were cleared. Much of the area that now supports woodland is too steep or rocky for farming. If properly managed, the woodland in these areas produces trees of high quality. Woodland currently make up about 98,000 acres of the county. Almost all of this acreage is privately owned.

The largest areas of woodland are in general soil map units 4 and 7, which are described in the section "General Soil Map Units." The most common trees are mixed hardwoods, mainly upland oaks and yellow-poplar.

Much of the existing commercial woodland would benefit from measures that improve stands, such as thinning out the excess trees or undesirable species, protecting the areas from grazing and fire, and controlling disease and insects. The Natural Resources Conservation Service, the Tennessee State Forestry Division, and the Cooperative Extension Service can help determine specific woodland management needs.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Elevation and aspect are of particular importance in mountainous areas.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, and the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest managment equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so

steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the periods when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, or bedrock or by a combination of such factors as wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail systems may be needed.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *volume* number. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year calculated at the age of culmination of mean annual increment. The estimates of the productivity of the soils in this survey are based on a culmination of 50 years.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

Gerald L. Montgomery, biologist, Natural Resources Conservation Service, helped prepare this section.

Sumner County has many areas of scenic, geologic, and historical interest. These areas are used for picnicking, camping, hiking, boating, fishing, hunting, sightseeing, golfing, tennis, and other sports. Old Hickory Lake and its surrounding lands provide most of the recreational areas in the county. Numerous areas owned by Federal, State and local government agencies are available for public use. Also, many privately-owned facilities and areas provide a variety of activities.

Recreational areas are increasing in number and kind because of the rapid urban growth and development in Sumner County. Because of the varied topography within the county, no single soil type dominates the recreational areas. Many of the soils in the county are well suited to the development of recreational facilities.

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation,

access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Wildlife Habitat

Gerald L. Montgomery, biologist, Natural Resources Conservation Service, helped prepare this section.

Sumner County has a large and varied population of fish and wildlife. Common wildlife species found in woodland areas include whitetail deer, gray squirrel, woodpeckers, gray fox, and raccoon. Bobwhite quail, cottontail rabbit, mourning dove, and many types of songbirds are attracted to openland areas. Muskrat and mink are attracted to streams and wetlands. Old Hickory Lake supports various species of fish, including bass, crappie, and walleye. Old Hickory Lake also provides resting and feeding areas for migratory waterfowl in fall and spring.

Deer populations are good and are increasing in Sumner County. Small game and bird populations are good and are increasing where food and cover are available. Raccoon populations are fair and are stable. The gray fox population is increasing, while the red fox population is decreasing. Coyotes are moving into Sumner County in areas along Old Hickory Lake. Old Hickory Lake also supports a permanent population of Canadian geese.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult

and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, oats, and grain sorghum.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, annual lespedeza, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, panicum, and switchgrass.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, and raccoon.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in

planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm, dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and shrinking and swelling can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features

are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, depth to a water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing estimated engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree

and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, and terraces and diversions.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area.

The estimates are based on field observations and on test data for these and similar soils.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing

water in swamps and marshes or in a closed depression is considered ponding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than a 50 percent in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table, that is, *perched* or *apparent*; and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(5)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalfs*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, thermic Typic Hapludalfs.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(4)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(5)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Armour Series

The Armour series consists of very deep, well drained soils. These soils formed in alluvium on terraces. They are in the southern part of the county in the Central Basin. Slopes range from 2 to 5 percent.

Armour soils are associated with Arrington, Byler, and Mimosa soils. Arrington soils, on flood plains, have a

mollic epipedon. Byler soils, on adjacent terraces, have a fragipan. Mimosa soils, on uplands, are clayey and are less than 60 inches deep over rock.

Typical pedon of Armour silt loam, 2 to 5 percent slopes; north of Gallatin, about 2.9 miles along Dobbins Pike from the intersection of Dobbins Pike and State Highway 109N, about 1.3 miles east along Phosphate Lane, 100 feet north of a small cemetery:

Ap—0 to 8 inches; dark yellowish brown (10YR 3/4) silt loam; weak medium granular structure; friable; many fine roots; common fine pores; few small black concretions; medium acid; abrupt smooth boundary.

AB—8 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; common fine roots; common fine pores; few small black concretions; medium acid; clear smooth boundary.

Bt1—11 to 33 inches; strong brown (7.5YR 4/6) silty clay loam; weak medium subangular blocky structure; friable; common fine roots; common fine pores; few faint clay films on faces of peds; common small black concretions; medium acid; gradual smooth boundary.

Bt2—33 to 60 inches; strong brown (7.5YR 4/6) silty clay loam; few medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; few faint clay films on faces of peds; common small black concretions; medium acid; clear wavy boundary.

The depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 10 percent in the A and B horizons and is as much as 20 percent or more in the C horizon, if it occurs. Reaction is strongly acid or medium acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 3 or 4. Texture is silt loam.

The AB and BA horizons, if they occur, have hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 4 to 6. Most pedons have brownish mottles. Texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 4 or 6. Some pedons have brownish mottles. Texture is silt loam or silty clay loam.

Some pedons have a C horizon below a depth of about 60 inches. This horizon contains as much as 20 percent gravel.

Arrington Series

The Arrington series consists of very deep, well drained soils. These soils formed in alluvium on flood plains. They are in the southern part of the county in the Central Basin. Slopes range from 0 to 2 percent.

Arrington soils are associated with Armour, Byler, and Mimosa soils. Armour soils, on terraces, have an argillic horizon. Byler soils, on terraces, have a fragipan. Mimosa soils, on uplands, are less than 60 inches deep over rock. They have a clayey subsoil.

Typical pedon of Arrington silt loam, occasionally flooded; east of Hendersonville on U.S. Highway 31E, about 1.6 miles north along Callander Road, 100 feet west along Stop Thirty Road, 175 feet north along Drakes Creek, 70 feet west of the creek:

Ap—0 to 10 inches; dark brown (10YR 3/3) silt loam; weak fine and medium granular structure; friable; few fine and many very fine roots; common very fine, fine, and medium pores and few coarse pores; slightly acid; abrupt smooth boundary.

A—10 to 31 inches; dark brown (10YR 3/3) silt loam; weak fine and medium granular structure; friable; few fine and common very fine roots; common very fine, fine, and medium pores; few very fine black concretions; slightly acid; clear smooth boundary.

Bw—31 to 54 inches; dark brown (10YR 3/3) silty clay loam; weak medium subangular blocky structure parting to weak fine and medium granular; friable; few fine and common very fine roots; common fine and very fine pores; few very fine black concretions; about 2 percent rounded fragments of chert 1/8 to 1/2 inch across; slightly acid; clear smooth boundary.

C—54 to 60 inches; dark grayish brown (10YR 4/2) silty clay loam; few fine faint brown, grayish brown, and yellowish brown mottles; weak coarse granular structure; friable; few very fine roots; few fine and very fine pores; common fine black and brown concretions; about 3 percent rounded fragments of chert 1/8 to 1/2 inch across; neutral.

The depth to bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 3 percent throughout the profile. Reaction is slightly acid or neutral.

The A horizon has hue of 10YR, value of 3, and chroma of 2 or 3. Texture is silt loam.

The Bw horizon has hue of 10YR, value of 3 or 4, and chroma of 3 or 4. It is silt loam or silty clay loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture is silt loam or silty clay loam.

Barfield Series

The Barfield series consists of shallow, well drained soils. These soils formed in material weathered from limestone. They are on uplands in the southern part of the county in the Central Basin. Slopes range from 5 to 20 percent.

Barfield soils are associated with Hampshire, Inman,

and Mimosa soils. Hampshire and Inman soils, which are commonly on nearby hillsides, are more than 20 inches deep over rock. They do not have a mollic epipedon. Mimosa soils, on adjacent landscapes, are more than 40 inches deep over rock. They do not have a mollic epipedon.

Typical pedon of Barfield silty clay loam, in an area of Barfield-Rock outcrop complex, 5 to 20 percent slopes; from Hendersonville, about 0.7 miles east of the intersection of U.S. Highway 31E and Center Point Road, 750 feet north along a farm road, 80 feet north of the rock fence:

Ap—0 to 4 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak medium granular structure; friable; common very fine and few fine and medium roots; few very fine and fine pores; about 1 percent limestone flagstones 6 inches across and 1 inch thick; neutral; clear smooth boundary.

Bw—4 to 10 inches; dark brown (10YR 3/3) clay; moderate medium subangular blocky structure; friable; common very fine and few fine and medium roots; few very fine and fine pores; very few fine black concretions; about 3 percent limestone flagstones 8 inches across and 1 inch thick; neutral; gradual smooth boundary.

BC—10 to 18 inches; brown (10YR 4/3) clay; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few very fine, fine, and medium roots; few very fine pores; few fine black concretions; about 15 percent limestone flagstones 6 to 15 inches across and 1/2 inch to 2 inches thick; neutral.

R—18 inches; limestone bedrock.

The depth to limestone bedrock ranges from 8 to 20 inches. The content of channers and flagstones of limestone ranges from 0 to 15 percent in the A horizon and from 3 to 25 percent in the B and BC horizons. Reaction ranges from slightly acid to mildly alkaline.

The A horizon has hue of 10YR, value of 3, and chroma of 2 or 3. Texture is silty clay loam.

The Bw horizon has hue of 10YR, value of 3, and chroma of 2 or 3. Some pedons have few or common brownish mottles. Texture is clay or silty clay.

The BC horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Most pedons have few or common brownish mottles. Texture is clay or silty clay.

Bewleyville Series

The Bewleyville series consists of very deep, well drained soils. These soils formed in a silty mantle and the underlying silty or clayey material. They are on uplands in the northern part of the county on the Highland Rim. Slopes range from 2 to 12 percent.

Bewleyville soils are associated with Dickson, Guthrie, and Sengtown soils. Dickson soils are in adjacent landscape positions. Guthrie soils are in landscape positions lower than those of the Bewleyville soils. Dickson and Guthrie soils have a fragipan. Sengtown soils, which are in higher landscape positions, are clayey.

Typical pedon of Bewleyville silty clay loam, 2 to 5 percent slopes, eroded; south of Portland, about 0.7 mile along Gregory Road from the intersection of Gregory Road and State Highway 109, about 0.7 mile west on Jackson Road, 100 feet south of the road:

Ap—0 to 8 inches; brown (10YR 4/3) silty clay loam; moderate medium granular structure; friable; few fine roots; few fine pores; medium acid; abrupt smooth boundary.

Bt1—8 to 21 inches; strong brown (7.5YR 5/6) silty clay loam; few fine distinct brown (10YR 4/3), yellowish brown (10YR 5/6), and yellowish red (5YR 5/6) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; few fine and medium pores; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—21 to 28 inches; yellowish red (5YR 4/6) silty clay loam; few fine faint yellowish red and few fine distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; few fine and medium pores; few faint clay films on faces of peds; few brown and black concretions and stains; very strongly acid; clear wavy boundary.

Bt3—28 to 35 inches; yellowish red (5YR 4/6) silty clay loam; common fine distinct strong brown (7.5YR) and few fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

2Bt4—35 to 60 inches; red (2.5YR 4/6) clay; common medium distinct dark red (10YR 3/6), strong brown (7.5YR 5/6), and few fine prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular and angular blocky structure; firm; few fine roots; few fine pores; common distinct clay films on faces of peds; very strongly acid.

The depth to limestone bedrock is more than 6 feet. The content of chert fragments ranges from 0 to 5 percent in the A and Bt horizons and from 0 to 25 percent in the 2Bt horizon. Reaction is strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4. Texture is silty clay loam.

The upper part of the Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. Most pedons have brownish or reddish mottles. Texture is silt loam or silty clay loam.

The lower part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. Most pedons have brownish or reddish mottles. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 6 or 8. Most pedons have mottles in shades of brown, red, or gray. Texture is silty clay loam, clay loam, or clay.

Byler Series

The Byler series consists of very deep, moderately well drained soils that have a fragipan. These soils formed in a silty mantle or alluvium over old alluvium or material weathered from limestone. They are on terraces in the southern part of the county in the Central Basin. Slopes range from 1 to 4 percent.

Byler soils are associated with Armour, Arrington, and Mimosa soils. Armour soils, on adjacent terraces, are well drained. They do not have a fragipan. Arrington soils, on flood plains, do not have a fragipan. Mimosa soils, on nearby uplands, have a clayey subsoil. They do not have a fragipan.

Typical pedon of Byler silt loam, 1 to 4 percent slopes; west of Gallatin, about 3.3 miles northwest along State Highway 25 from the intersection of State Highway 25 and Long Hollow Pike, 0.95 miles west along Liberty Lane, 1,000 feet south of Liberty Lane, 200 feet west of a drain:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; moderate fine and medium granular structure; friable; many fine roots; few fine pores; few pebbles and fragments of chert; few fine black concretions; slightly acid; abrupt smooth boundary.

BA—9 to 15 inches; yellowish brown (10YR 5/4) silt loam; few fine faint brown mottles; weak medium subangular blocky and moderate medium granular structure; friable; common fine roots; few fine pores; few faint clay films on faces of peds; few pebbles and fragments of chert; few fine black concretions; medium acid; clear smooth boundary.

Bt—15 to 20 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; few faint clay films on faces of peds; few fragments of chert and gravel; few fine black concretions; medium acid; clear smooth boundary.

Btx1—20 to 33 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct strong brown (10YR 5/6) and few fine and medium distinct pale brown (10YR 6/3) and light brownish gray (10YR 6/2) mottles; weak thick platy structure parting to moderate medium subangular blocky; very firm, brittle; few fine roots; few fine pores: few faint clay films on faces of peds; few fragments of chert and gravel; common fine and medium brown and black concretions; medium acid; clear wavy boundary.

Btx2—33 to 42 inches; mottled yellowish brown (10YR 5/4), strong brown (7.5YR 4/6), gray (10YR 6/1), and light brownish gray (10YR 6/2) silt loam; weak thick platy structure parting to moderate medium subangular blocky; very firm, brittle; few faint clay films on faces of peds; few fine and medium pores; few fragments of chert and gravel; few fine brown and black concretions; strongly acid; clear irregular boundary.

2Bt—42 to 60 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/4), light brownish gray (2.5Y 6/2), and strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; about 5 percent fragments of chert and gravel; common fine, medium, and coarse brown and black concretions; strongly acid.

The depth to limestone bedrock is more than 60 inches. The depth to the fragipan ranges from 20 to 31 inches. Reaction is strongly acid or medium acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 4, and chroma of 3. Texture is silt loam.

The BA horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 4. Texture is silt loam.

The Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 4 or 6. Texture is silt loam or silty clay loam.

The Btx horizon is mottled in shades of brown and gray or has hue of 10YR, value of 6, chroma of 2 to 4, and brownish and grayish mottles. Texture is silt loam or silty clay loam.

The 2Bt horizon is mottled in shades of brown and gray or has hue of 10YR, value of 6 or 7, chroma of 2, and brownish and grayish mottles.

Captina Series

The Captina series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in alluvium and limestone materials. They are on terraces in the northern part of the county on the Highland Rim. Slopes range from 1 to 4 percent.

Captina soils are associated with Nolin, Mountview,

and Sengtown soils. The well drained Mountview and Sengtown soils on nearby uplands and the well drained Nolin soils on flood plains do not have a fragipan.

Typical pedon of Captina silt loam, 1 to 4 percent slopes; east of Portland along State Highway 52 to the intersection with Harper Road, north about 1.3 miles along Harper Road, about 250 feet east, in a field:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak fine and medium granular structure; friable; common very fine and few fine roots; common very fine and few fine pores; about 5 percent gravel as much as 1 inch across; slightly acid; abrupt smooth boundary.

BA—7 to 13 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few very fine roots; common fine and very fine pores; about 5 percent gravel as much as 1/2 inch across; strongly acid; clear smooth boundary.

Bt—13 to 21 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct strong brown (7.5YR 5/6) and common medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; common very fine roots; common fine and very fine pores; few faint clay films on faces of peds; few fine black concretions; about 5 percent gravel as much as 1/2 inch across; strongly acid; clear smooth boundary.

Btx1—21 to 32 inches; mottled yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/8) silt loam; few nearly vertical streaks of gray silt loam as much as 1/2 inch wide; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm, brittle; few faint clay films on faces of peds; few medium and common fine and very fine pores; about 6 percent gravel as much as 1/4 inch across; very strongly acid; clear smooth boundary.

Btx2—32 to 72 inches; mottled yellowish brown (10YR 5/6), gray (10YR 6/1), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/8) silt loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm, brittle; common nearly vertical streaks of gray silt loam as much as 1 inch wide; few faint clay films on faces of peds; few medium and common fine and very fine pores; few black concretions; about 10 percent gravel as much as 1/2 inch across; very strongly acid.

The depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to about 15 percent throughout the profile. Reaction is strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3. Most pedons have brownish mottles. Texture is silt loam.

The BA horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 4 to 6. Most pedons have brownish mottles.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. Most pedons have brownish mottles, and some pedons have grayish mottles in the lower part. Texture is silt loam or silty clay loam.

The Btx horizon is mottled in shades of gray and brown or has hue of 10YR or 2.5Y, value of 5 or 6, chroma of 3 to 8, and mottles in shades of gray. Texture is silt loam or silty clay loam.

Dellrose Series

The Dellrose series consists of very deep, well drained soils. These soils formed in colluvium. They are on foot slopes along the base of the Highland Rim Escarpment across the central part of the county. Slopes range from 12 to 40 percent.

Dellrose soils are associated with Mimosa and Sulphura soils. Mimosa soils, on adjacent hillsides, have a clayey subsoil. Sulphura soils, on nearby hillsides, are less than 40 inches deep over rock.

Typical pedon of Dellrose gravelly silt loam, 20 to 40 percent slopes; north of Hendersonville, about 4.2 miles west along Long Hollow Pike from the intersection of Long Hollow Pike and Shackle Island Road, 1.25 miles along Allen Road, 1,800 feet north along a power line, 400 feet east, 120 feet north of a drainageway:

Ap—0 to 8 inches; dark brown (10YR 3/3) gravelly silt loam; moderate fine and medium granular structure; friable; common very fine and fine roots; common very fine and fine pores; about 25 percent fragments as much as 2 inches across; medium acid; abrupt smooth boundary.

BA—8 to 14 inches; brown (7.5YR 4/4) gravelly silt loam; few fine distinct dark brown (10YR 3/3) and dark yellowish brown (10YR 4/6) mottles; moderate fine and medium granular and weak fine subangular blocky structure; friable; common very fine and fine roots; common fine and few medium pores; about 30 percent fragments as much as 2 inches across; medium acid; clear smooth boundary.

Bt1—14 to 25 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; friable; common very fine and few fine roots; common very fine and few

fine pores; few faint clay films on faces of peds; about 30 percent fragments as much as 2 inches across; strongly acid; clear smooth boundary.

Bt2—25 to 40 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; few distinct clay films on faces of peds; about 30 percent fragments as much as 2 inches across; strongly acid; clear smooth boundary.

Bt3—40 to 60 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; common distinct clay films on faces of peds; about 25 percent fragments as much as 3 inches across; medium acid; clear wavy boundary.

The depth to limestone bedrock is more than 60 inches. The content of fragments of shale and chert ranges from about 15 to 35 percent. Reaction is strongly acid or medium acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 3, and chroma of 2 or 3. Texture is gravelly silt loam.

The BA horizon, if it occurs, has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Most pedons have brownish mottles. Texture is gravelly silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. Most pedons have brownish mottles. Texture is gravelly silt loam or gravelly silty clay loam.

Dickson Series

The Dickson series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. They formed in a silty mantle about two to three feet thick and in the underlying material that weathered from cherty limestone. They are on hilltops in the northern part of the county on the Highland Rim. Slopes range from 2 to 5 percent.

Dickson soils are associated with Bewleyville, Guthrie, and Mountview soils. The well drained Bewleyville and Mountview soils, on adjacent landscapes, do not have a fragipan. The poorly drained Guthrie soils are in adjacent depressions.

Typical pedon of Dickson silt loam, 2 to 5 percent slopes, eroded; southeast of Sengtown, about 0.65 miles south of the intersection of Sengtown and Corinth Roads, 700 feet west of Corinth Road:

Ap—0 to 11 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; few fine roots; medium acid; abrupt smooth boundary.

Bt—11 to 20 inches; light olive brown (2.5Y 5/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; few faint clay films in some pores; few fine black concretions; strongly acid; clear smooth boundary.

Btx/E—20 to 28 inches; yellowish brown (10YR 5/4) silt loam; common fine prominent reddish yellow (7.5YR 6/8) and common fine distinct gray (10YR 6/1) and light olive brown (2.5Y 5/4) mottles; weak coarse and very coarse prismatic structure parting to weak medium subangular blocky; firm, slightly brittle; common thin grayish seams; few fine roots along seams; few faint clay films on faces of peds; few dark brown stains; few fine black concretions; strongly acid; gradual diffuse boundary.

Btx1—28 to 38 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct gray (10YR 6/1) and common fine prominent strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; polygons 4 to 14 inches across that are separated by grayish seams 1/2 inch to 2 inches wide; firm, brittle; few fine roots along seams; few faint clay films on faces of peds; few dark brown stains; few fine black concretions; about 5 percent fragments of chert less than 1/2 inch across; strongly acid; clear smooth boundary.

Bx3—38 to 47 inches; yellowish brown (10YR 5/4) silt loam; many medium prominent red (2.5YR 4/6) and many medium distinct gray (10YR 6/1) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; polygons 4 to 14 inches across with seams that are 1/4 inch to 2 inches wide; firm, brittle; few fine roots along seams; few faint clay films on faces of peds; few fine black concretions; about 5 percent fragments of chert less than 1/2 inch across; strongly acid; clear smooth boundary.

2Bt—47 to 60 inches; red (2.5YR 4/6) gravelly silty clay loam; common medium prominent gray (10YR 6/1) and yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; few distinct clay films on faces of peds; about 20 percent fragments of chert 1/4 inch to 3 inches across; strongly acid.

The depth to bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 5 percent in the Btx horizon and from 5 to 25 percent in the 2Bt horizon. Reaction is strongly acid or very strongly acid,

but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 10YR or 2.5Y, value of 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The E material has hue of 2.5Y, value of 5 or 6, and chroma of 4.

The Btx horizon has hue of 10YR or 2.5Y, value of 5, and chroma of 4 to 6. It has mottles in shades of red, gray, and brown. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It has mottles in shades of gray and brown. Texture is gravelly silty clay loam or gravelly clay.

Egam Series

The Egam series consists of very deep, moderately well drained soils. These soils formed in alluvium. They are on flood plains in the southern part of the county in the Central Basin. Slopes range from 0 to 2 percent.

Egam soils are associated with Armour, Arrington, and Byler soils. Armour soils, on adjacent terraces, do not have a mollic epipedon. Arrington soils, on adjacent flood plains, do not have a clayey subsoil. Byler soils, on adjacent terraces, have a fragipan.

Typical pedon of Egam silt loam, occasionally flooded; 1.0 mile west of Gallatin along Long Hollow Pike from the intersection of Long Hollow Pike and State Highway 25, about 250 feet north of the road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam; few fine faint very dark brown mottles; moderate fine and medium granular structure; friable; common very fine and fine roots; few fine and medium pores; slightly acid; abrupt smooth boundary.

A—9 to 25 inches; very dark brown (10YR 2/2) silty clay loam; moderate medium prismatic structure parting to strong medium angular blocky; firm; common very fine and fine roots; common very fine and fine and few medium pores; slightly acid; gradual smooth boundary.

Bw1—25 to 40 inches; very dark brown (10YR 2/2) clay; moderate medium prismatic structure parting to strong medium angular blocky; firm; few very fine and fine roots; common very fine and fine pores; slightly acid; clear smooth boundary.

Bw2—40 to 47 inches; dark brown (10YR 4/3) clay; few fine faint dark yellowish brown and common fine faint dark brown (10YR 3/3) and few fine faint dark grayish brown mottles; weak fine prismatic structure parting to moderate medium angular blocky and subangular blocky; firm; few very fine and fine roots; common very fine and fine pores; slightly acid; clear smooth boundary.

Bw3—47 to 60 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine faint dark brown and few fine distinct dark grayish brown (10YR 4/2) mottles; moderate medium angular and subangular blocky structure; friable; few very fine and fine roots; common very fine and fine pores; slightly acid; clear smooth boundary.

The depth to bedrock is more than 60 inches. Reaction is slightly acid or neutral throughout the profile.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or 3. Most pedons have brownish mottles. Texture is silt loam.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or 3. Some pedons have brownish mottles. Texture is silty clay loam, silty clay, or clay.

The Bw1 horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or 3. Some pedons have brownish mottles. Texture is silty clay loam, silty clay, or clay.

The Bw2 horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. It has mottles in shades of brown. Texture is silty clay loam, silty clay, or clay.

Etowah Series

The Etowah series consists of very deep, well drained soils. These soils formed in alluvium. They are on terraces in the northern part of the county on the Highland Rim. Slopes range from 2 to 12 percent.

Etowah soils are associated with Dickson, Nolin, and Sengtown soils. The moderately well drained Dickson soils are on adjacent landscapes or are in landscape positions higher than those of the Etowah soils. They have a fragipan. Nolin soils, on flood plains, do not have an argillic horizon. They are subject to flooding.

Typical pedon of Etowah silt loam, 2 to 5 percent slopes; north of Portland, 0.4 miles east on Oak Grove Road from the intersection of Rapids Road and Oak Grove Road, about 4,000 feet upstream along Drakes Creek, about 210 feet west of the stream, in a field:

Ap—0 to 8 inches; dark yellowish brown (10YR 3/4) silt loam; weak fine granular structure; friable; few fine roots; few fine pores; medium acid; abrupt smooth boundary.

BA—8 to 14 inches; dark brown (7.5YR 4/4) silt loam; few medium distinct dark yellowish brown (10YR 3/4) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine and few medium pores; medium acid; clear smooth boundary.

Bt1—14 to 20 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure;

friable; few very fine and fine roots; few fine and medium pores; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—20 to 30 inches; yellowish red (5YR 4/6) silty clay loam; few fine distinct red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few very fine and fine roots; few fine and common medium pores; few distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt3—30 to 60 inches; red (2.5YR 4/6) silty clay loam; common fine distinct yellowish red (5YR 4/6) and strong brown (7.5YR 5/6) and few fine prominent yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; few fine pores; common distinct clay films on faces of peds; strongly acid; gradual smooth boundary.

The depth to limestone bedrock is more than 60 inches. Reaction is strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 3, and chroma of 4. Texture is silt loam.

The BA horizon, if it occurs, has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. Most pedons have brownish mottles. Texture is silt loam.

The Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 6 or 8. Most pedons have brownish and reddish mottles. Texture is silty clay loam or clay loam.

Godwin Series

The Godwin series consists of very deep, somewhat poorly drained soils. These soils formed in alluvium. They are on flood plains along drainageways and in depressions in the southern part of the county in the Central Basin. Slopes range from 0 to 2 percent.

Godwin soils are associated with the Armour, Arrington, Byler, and Mimosa soils. The well drained Armour soils, in higher positions on terraces, do not have a mollic epipedon. The well drained Arrington soils, on adjacent flood plains, are fine-silty. Byler soils, on lower terraces, have a fragipan. They do not have a mollic epipedon. The well drained Mimosa soils, in higher positions on uplands, do not have a mollic epipedon.

Typical pedon of Godwin silt loam; west of Gallatin, 1.1 miles west along State Highway 25 from the intersection of Long Hollow Pike and State Highway 25, about 625 feet north of State Highway 25:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium granular structure; friable; many very fine and fine roots; few fine and medium pores; slightly acid; clear smooth boundary.

A—7 to 26 inches; very dark brown (10YR 2/2) silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium prismatic structure parting to strong medium and coarse granular; firm; common very fine and fine roots; common very fine and fine pores; few small brown concretions; neutral; gradual wavy boundary.

Bw—26 to 47 inches; very dark gray (10YR 3/1) silty clay; common fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium prismatic structure parting to moderate medium granular and fine subangular blocky; firm; common very fine and fine roots; common very fine and fine pores; many small brown concretions; neutral; clear smooth boundary.

Cg—47 to 60 inches; gray (10YR 5/1) clay; common fine and medium prominent strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; massive; firm; few very fine roots; many small to large black and brown concretions; neutral.

The depth to bedrock is more than 60 inches. Reaction is slightly acid or neutral.

The Ap horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or 3. Texture is silt loam.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or 3. Most pedons have brownish mottles. Texture is silty clay loam or silty clay.

The Bw horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Some pedons have brownish mottles. Texture is silty clay or clay.

The Cg horizon has hue of 10YR, value of 4 or 5, and chroma of 1. Most pedons have brownish mottles. Texture is silty clay or clay.

Guthrie Series

The Guthrie series consists of very deep, poorly drained soils that have a fragipan in the subsoil. These soils formed in silty material. They are on upland flats and in depressions in the northern part of the county on the Highland Rim. Slopes range from 0 to 2 percent.

Guthrie soils are associated with Bewleyville, Dickson, and Taft soils. Bewleyville soils, on the higher ridges, are well drained. Dickson soils, on slightly higher adjacent ridges, are moderately well drained. Taft soils, in adjacent positions, are somewhat poorly drained.

Typical pedon of Guthrie silt loam, ponded; north of Portland, about 1 mile northeast along Wood Road from the intersection of Wood Road and State Highway 109, about 1,200 feet west of the road, 75 feet north of a drainageway, in a wooded area:

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and medium roots; few fine pores; very strongly acid; abrupt smooth boundary.
E—3 to 7 inches; grayish brown (10YR 5/2) silt loam; few fine faint brown mottles; weak fine granular structure; friable; many fine and medium roots; few fine pores; very strongly acid; abrupt smooth boundary.
BE—7 to 12 inches; dark grayish brown (10YR 4/2) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; common fine pores; extremely acid; clear smooth boundary.
Bt—12 to 26 inches; grayish brown (10YR 5/2) silt loam; common medium distinct yellowish brown (10YR 5/6) and few fine faint dark grayish brown mottles; moderate medium and fine subangular blocky structure; firm; common fine and medium roots; few fine pores; few faint clay films on faces of peds; extremely acid; gradual smooth boundary.
Btg—26 to 50 inches; gray (10YR 5/1) silt loam; few fine distinct yellowish brown (10YR 5/4) and few fine faint grayish brown and gray mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few faint clay films on faces of peds; extremely acid; clear smooth boundary.
Btx—50 to 60 inches; mottled light brownish gray (10YR 6/2), gray (10YR 6/1), pale brown (10YR 6/3), and yellowish brown (10YR 5/6) silt loam; massive parting to moderate medium subangular blocky structure; very firm, brittle; common fine pores; few faint clay films on faces of peds; very strongly acid.

The depth to bedrock is more than 60 inches. Reaction ranges from extremely acid to strongly acid, but the surface layer is less acid in areas that have been limed.

The A and E horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. They can have few or common grayish and brownish mottles. Texture is silt loam.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or less. It has few or common white, grayish, brownish, and yellowish mottles. Texture is silt loam or silty clay loam.

The Btx horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or less. It has few to many grayish, white, brownish, and reddish mottles. Texture is silt loam or silty clay loam.

The Guthrie soils in Sumner County differ in the range of characteristics defined as typical for the series. In other survey areas, the upper part of the fragipan is at a depth of 20 to 40 inches. In Sumner County, however, the upper part of the fragipan is commonly at a depth of 40 to 55 inches.

Hampshire Series

The Hampshire series consists of deep, well drained soils. These soils formed in material weathered from interbedded siltstone, sandstone, shale, and limestone. They are mainly on uplands in the southeastern part of the county in the Central Basin. Slopes range from 5 to 20 percent.

Hampshire soils are associated with Barfield, Inman, and Talbott soils. Barfield soils, in landscape positions higher than those of the Hampshire soils, are less than 20 inches deep over rock. Inman soils are on adjacent slopes, and Talbott soils are in landscape positions lower than those of the Hampshire soils. Inman and Talbott soils are less than 40 inches deep over rock.

Typical pedon of Hampshire silt loam, 5 to 12 percent slopes, eroded; east of Gallatin, about 3.3 miles south on Corum Hill Road from the intersection of State Highway 25 and Corum Hill Road at Castalian Springs, about 2,500 feet west of Corum Hill Road:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; common fine and medium roots; common fine and medium pores; few small black concretions; medium acid; clear smooth boundary.
Bt1—6 to 18 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular and angular blocky structure; friable; common fine and medium roots; few fine and medium pores; common distinct clay films on faces of peds; few small black concretions; few soft weathered fragments 1/4 to 3/4 inch across; strongly acid; gradual smooth boundary.
Bt2—18 to 28 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular and angular blocky structure; friable; few fine roots; few fine and medium pores; common distinct clay films on faces of peds; few fine roots; few medium pores; few small black concretions; few soft weathered fragments 1/4 to 3/4 inch across; strongly acid; clear wavy boundary.
Bt3—28 to 43 inches; strong brown (7.5YR 5/6) clay; few fine distinct yellowish brown (10YR 5/4) and yellowish red (5YR 5/6) mottles; moderate medium angular and subangular blocky structure; firm; few fine roots; few fine pores; common prominent clay films on faces of peds; about 10 percent thin weathered fragments 1/2 to 2 inches across; strongly acid; clear smooth boundary.
C—43 to 49 inches; strong brown (7.5YR 5/6) very channery clay loam; few fine distinct yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) mottles; massive; about 45 percent weathered fragments 1/4 to 1/2 inch thick and 1 to 3 inches across; strongly acid; abrupt smooth boundary.

Cr—49 to 60 inches; interbedded strata of weathered rock that is 1/2 inch to 3 inches thick and is separated by thin horizontal seams of sandy and clayey material; strongly acid; abrupt smooth boundary.

The depth to strata of weathered bedrock ranges from 40 to 60 inches. The content of weathered fragments ranges from 0 to 15 percent throughout the solum and from 20 to 50 percent in the C horizon. Reaction is strongly acid or medium acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 6. Most pedons have brownish and reddish mottles. Texture is clay or silty clay.

The C horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 to 6. Most pedons have brownish and reddish mottles. Texture is commonly very channery clay loam or very channery loam.

The Cr material consists of interbedded strata of weathered sandstone, siltstone, shale, and limestone in shades of brown and red.

Harpeth Series

The Harpeth series consists of very deep, well drained soils. These soils formed in a silty mantle and alluvium over material weathered from limestone. They are on high terraces and uplands in the southern part of the county in the Central Basin. Slopes range from 2 to 10 percent.

Harpeth soils are associated with Barfield, Byler, Inman, and Mimosa soils. Barfield soils, which are adjacent positions or are in landscape positions higher than those of the Harpeth soils, are clayey. They are less than 20 inches deep over rock. Byler soils, on stream terraces at the lower elevations, have a fragipan. Inman soils, which are in adjacent positions or landscape positions lower than those of the Harpeth soils, are clayey. They are less 40 inches deep over rock. Mimosa soils, which are in adjacent positions and on nearby uplands, are clayey.

Typical pedon of Harpeth silt loam, 2 to 5 percent slopes, eroded; west of Gallatin, about 2.0 miles west along Long Hollow Pike from the intersection of State Highway 25 and Long Hollow Pike, 200 feet north of the road, 150 feet east of a private drive:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; many fine pores; strongly acid; abrupt smooth boundary.

BA—7 to 15 inches; strong brown (7.5YR 4/6) and brown (10YR 4/3) silt loam; weak fine granular structure parting to weak fine subangular blocky; friable; many fine roots; many fine pores; few fine iron and manganese concretions; medium acid; clear smooth boundary.

Bt1—15 to 25 inches; strong brown (7.5YR 4/6) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; many fine pores; few faint clay films on faces of peds; few fine iron and manganese concretions; slightly acid; clear smooth boundary.

Bt2—25 to 35 inches; strong brown (7.5YR 4/6) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many fine pores; common distinct clay films on faces of peds; common fine iron and manganese concretions; slightly acid; clear smooth boundary.

2Bt3—35 to 49 inches; strong brown (7.5YR 4/6) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many fine pores; common distinct clay films on faces of peds; common fine iron and manganese concretions; about 1 percent, by weight, pebbles that are derived from mixed sedimentary rock and are 2 to 5 millimeters in diameter; slightly acid; gradual smooth boundary.

2Bt4—49 to 60 inches; strong brown (7.5YR 4/6) clay loam; many medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common fine pores; common distinct clay films on faces of peds; common fine iron and manganese concretions; about 1 percent, by weight, pebbles that are derived from mixed sedimentary rocks and are 2 to 5 millimeters in diameter; slightly acid.

The depth to limestone bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 10 percent in the A and Bt horizons and from 0 to 15 percent in the 2Bt horizon. Reaction is slightly acid to strongly acid.

The Ap horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 4. Some pedons have a surface layer that is less than 7 inches thick and has hue of 10YR or 7.5YR, value of 3, and chroma of 2 or 3.

The Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6. Texture is silt loam or silty clay loam. Most pedons contain brownish mottles in the lower part.

The 2Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6. Texture is commonly clay loam or silty clay loam; however, in some pedons the texture includes silty clay or clay below a depth of about 48 inches. Most pedons have few or common brownish mottles.

Humphreys Series

The Humphreys series consists of very deep, well drained soils. These soils formed in gravelly colluvium and alluvium on terraces and foot slopes. They are dominantly near the base of the Highland Rim Escarpment across the central part of the county. A few areas are on the Highland Rim in the northern part of the county. Slopes range from 2 to 8 percent.

Humphreys soils are associated with Ocana and Sulphura soils. Ocana soils, on adjacent flood plains, do not have an argillic horizon. Sulphura soils, on adjacent hillsides, are less than 40 inches deep over rock.

Typical pedon of Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded; north of Hendersonville, 8 miles on Shackle Island Road to Capps Gap Road, 0.3 mile north along Capps Gap Road, 300 feet west of the road:

Ap—0 to 8 inches; dark brown (10YR 3/3) gravelly silt loam; moderate medium granular structure; friable; many fine roots; common fine and very fine pores; about 25 percent gravel 1/8 inch to 2 inches across; neutral; clear smooth boundary.

BA—8 to 17 inches; brown (10YR 4/3) gravelly silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; common fine and very fine pores; about 30 percent gravel 1/8 inch to 2 inches across; medium acid; clear smooth boundary.

Bt1—17 to 36 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common fine and very fine pores; few faint clay films on faces of peds; about 15 percent gravel 1/8 to 2 inches across; medium acid; gradual smooth boundary.

Bt2—36 to 55 inches; dark yellowish brown (10YR 4/4) gravelly silty clay loam; common fine and medium faint yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; common fine pores; few distinct clay films on faces of peds; about 15 percent gravel 1/8 inch to 2 inches across; medium acid; gradual smooth boundary.

C—55 to 60 inches; dark yellowish brown (10YR 4/4) gravelly clay loam; common fine faint yellowish brown (10YR 5/4) mottles; massive; friable; about 20 percent gravel 1/16 inch to 2 inches across; medium acid.

The depth to bedrock is more than 60 inches. The content of gravel ranges from about 10 to 25 percent in the A horizon, from about 15 to 35 percent in the B horizon, and from 20 to more than 35 percent in the C horizon. Reaction is strongly acid or medium acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 3, and chroma of 3 or 4. Texture is gravelly silt loam.

The BA horizon has hue of 10YR, value of 4, and chroma of 3 or 4. Texture is gravelly silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Texture is gravelly silt loam or gravelly silty clay loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 4. Texture is commonly gravelly clay loam but can range to gravelly silty clay loam.

Inman Series

The Inman series consists of moderately deep, well drained soils. These soils formed in material weathered from limestone on uplands. They are in the southeastern part of the county in the Central Basin. Slopes range from 10 to 35 percent.

Inman soils are associated with Barfield, Hampshire, and Harpeth soils. Barfield soils, in the lower landscape positions, are less than 20 inches deep over rock. Hampshire soils, commonly on adjacent slopes, are more than 40 inches deep over rock. Harpeth soils, on nearby uplands, are more than 60 inches deep over rock.

Typical pedon of Inman flaggy silty clay loam, 10 to 20 percent slopes, eroded; east of Gallatin, along State Highway 25 to the intersection with Corum Hill Road at Castalian Springs, about 1.5 miles south along Corum Hill Road, 50 feet south along Macedonia Church Road, 225 feet west of the road:

Ap—0 to 6 inches; brown (10YR 4/3) flaggy silty clay loam; moderate medium granular structure; friable; many very fine and fine roots; common very fine and fine pores; about 22 percent channers and flagstones of weathered limestone; neutral; abrupt smooth boundary.

Bw1—6 to 11 inches; yellowish brown (10YR 5/4) flaggy silty clay; few fine distinct pale brown (10YR 6/3) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine roots; few fine pores; few faint clay films on faces of peds; about 23 percent channers and flagstones of weathered limestone; slightly acid; clear broken boundary.

Bw2—11 to 21 inches; light olive brown (2.5Y 5/4) flaggy silty clay; common fine distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure grading to weak medium platy rock structure in the lower part; firm; few fine roots; about 30 percent channers and

flagstones of weathered limestone; neutral; gradual wavy boundary.

Cr/B—21 to 32 inches; level-bedded, brownish, weathered limestone strata about 1 to 3 inches thick in the Cr part, which makes up about 80 percent of the horizon; horizontal seams of mottled light olive brown (2.5Y 5/4), strong brown (7.5YR), and grayish brown (2.5Y 5/2) silty clay 1/2 to 1 inch thick in the B part, which makes up about 20 percent of the horizon; few fine prominent gray (10YR 6/1) and light gray (10YR 7/2) streaks and pockets of soft, highly weathered rock; weak fine subangular blocky structure; firm; few very fine roots; neutral; abrupt smooth boundary.

Cr—32 to 60 inches; thin, level-bedded, weathered, brownish limestone strata.

The depth to strata of weathered limestone bedrock ranges from 20 to 40 inches. The content of channers and flagstones ranges from 15 to 35 percent. Reaction is slightly acid or neutral.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. Texture is flaggy silty clay loam.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. Most pedons have brownish mottles. Texture is flaggy clay or flaggy silty clay.

The Cr material consists of brownish or grayish strata of weathered limestone.

Melvin Series

The Melvin series consists of very deep, poorly drained soils. These soils formed in alluvium in slight depressions on flood plains along drainageways. They are in the Central Basin and on the Highland Rim. Slopes range from 0 to 2 percent.

The Melvin soils are associated with Arrington, Byler, Egam, and Godwin soils in the Central Basin and Ocana and Nolin soils on the Highland Rim. The well drained Arrington soils, on adjacent landscapes, have a mollic epipedon. The moderately well drained Byler soils, on adjacent low terraces, have a fragipan. The clayey Egam and Godwin soils, on adjacent landscapes, have a mollic epipedon. Ocana and Nolin soils, on adjacent landscapes, are well drained.

Typical pedon of Melvin silt loam, frequently flooded; north of Gallatin about 3.25 miles along State Highway 109N from the intersection of State Highways 109N and 31E, about 600 feet west:

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable; common fine medium and coarse roots; common very fine and fine pores; medium acid; clear smooth boundary.

Bg—5 to 30 inches; light brownish gray (10YR 6/2) silt loam; few fine faint brown and grayish brown and few fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; common fine roots; common fine pores; common black and brown stains 1/4 inch to 2 inches across; about 2 percent fragments of chert 1/4 inch to 1 inch across; medium acid; gradual smooth boundary.

Cg—30 to 60 inches; light gray (10YR 7/2) silt loam; common fine distinct grayish brown (10YR 5/2) mottles; massive; friable; few fine roots; common fine pores; many black stains 1/2 inch to 3 inches across; about 10 percent fragments of chert 1/2 inch to 3 inches across; medium acid.

The depth to limestone bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 5 percent to a depth of about 30 inches and ranges from 0 to 15 percent below this depth. Reaction is medium acid to neutral.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Texture is silt loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. Most pedons have brownish or grayish mottles. Texture is silt loam or silty clay loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. Most pedons have brownish or grayish mottles. Texture is silt loam or silty clay loam.

Mimosa Series

The Mimosa series consists of deep, well drained soils. These soils formed in material weathered from limestone. They are on uplands in the southeastern part of the county in the Central Basin. Slopes range from 2 to 45 percent.

The Mimosa soils are associated with Barfield, Dellrose, Harpeth, and Sulphura soils. Harpeth soils, on adjacent landscapes, are fine-silty and are more than 60 inches deep over rock. Barfield soils, on adjacent landscapes, are less than 20 inches deep over rock. Dellrose soils are in adjacent positions or in landscape positions higher than those of the Mimosa soils. They are more than 60 inches deep over rock. Sulphura soils, in higher landscape positions, are less than 40 inches deep over rock.

Typical pedon of Mimosa silt loam, 5 to 12 percent slopes, eroded; northwest of Gallatin, about 2.6 miles along State Highway 25 from the intersection of State Highway 25 and Long Hollow Pike, about 1,400 feet along a farm road, 400 feet west:

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; friable; common very fine and fine roots; few fine and very fine pores; few fine brown and black concretions; slightly acid; abrupt smooth boundary.

Bt1—7 to 15 inches; yellowish brown (10YR 5/6) silty clay; moderate medium subangular and angular blocky structure; firm; common fine roots; few fine pores; common distinct clay films on faces of peds; few fine brown and black concretions; strongly acid; gradual wavy boundary.

Bt2—15 to 27 inches; yellowish brown (10YR 5/6) clay; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; very firm; few fine roots; few fine pores; many distinct clay films on faces of peds; few fine black concretions and stains; strongly acid; gradual wavy boundary.

Bt3—27 to 47 inches; yellowish brown (10YR 5/4) clay; few fine faint yellowish brown and few fine distinct pale brown (10YR 6/3) mottles; moderate medium angular blocky structure; very firm; few fine roots; few very fine pores; common distinct clay films on faces of peds; common fine black concretions and stains; strongly acid; gradual wavy boundary.

C—47 to 55 inches; yellowish brown (10YR 5/4) clay; common medium distinct yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) and gray (10YR 6/1) mottles; massive; very firm; common black stains; medium acid; abrupt wavy boundary.

R—55 inches; gray limestone bedrock.

The depth to limestone bedrock ranges from 40 to 60 inches. Reaction in the upper part of the profile ranges from very strongly acid to medium acid, but the surface layer is less acid in areas that have been limed. Reaction in the layer directly above the bedrock ranges from medium acid to mildly alkaline.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 3 or 4. Texture is silt loam, although in severely eroded areas it is silty clay.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Most pedons have brownish mottles. Texture is clay or silty clay, but in the upper few inches it is silty clay loam.

The C horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5, and chroma of 4 to 6. Most pedons have brownish and grayish mottles. Texture is clay or silty clay.

Mountview Series

The Mountview series consists of very deep, well drained soils. These soils formed in a silty mantle and the underlying clayey material that weathered from limestone. They are on uplands in the northern part of the county on the Highland Rim. Slopes range from 2 to 12 percent.

Mountview soils are associated with Dickson, Sengtown, Sugargrove, and Taft soils. Dickson soils, on adjacent landscapes, have a fragipan. Sengtown soils, on adjacent hillsides, are clayey. Sugargrove soils, on adjacent lower hillsides, are less than 60 inches deep over rock. Taft soils, in slight depressions and on terraces, have a fragipan.

Typical pedon of Mountview silt loam, 2 to 5 percent slopes, eroded; about 2.5 miles north of Sengtown and 0.75 miles south of the Kentucky State line on Martin Chapel Road, 50 feet east of the road:

Ap—0 to 6 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium granular structure; friable; common fine and medium roots; few very fine and fine pores; strongly acid; clear smooth boundary.

BA—6 to 11 inches; yellowish brown (10YR 5/6) silt loam; common medium faint yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure; friable; common fine and medium roots; common fine pores; strongly acid; clear smooth boundary.

Bt—11 to 19 inches; strong brown (7.5YR 5/6) silty clay loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; common fine pores; strongly acid; clear smooth boundary.

Bt/E1—19 to 23 inches; yellowish brown (10YR 5/6) silty clay loam in the Bt part and brown (10YR 5/3) silt loam in the E part, which makes up about 20 percent of the horizon; weak medium subangular blocky structure in the Bt part and weak fine granular structure in the E part; common fine distinct strong brown (7.5YR 5/6) coatings on some peds in the Bt part; firm in the Bt part and friable in the E part; few fine roots and pores; very strongly acid; clear smooth boundary.

Bt/E2—23 to 29 inches; yellowish red (5YR 5/6) silty clay loam in the Bt part and light yellowish brown (10YR 6/4) silt loam in the E part, which makes up about 20 percent of the horizon; few fine prominent dark red (10R 3/6) and yellowish brown (10YR 5/4) mottles in the Bt part; moderate medium subangular blocky structure in the Bt part and weak fine granular structure in the E part; few faint clay films on faces of peds in the Bt part; firm in the Bt part and friable in the E part; few fine roots and pores; about 2 percent fragments of weathered chert; very strongly acid; clear smooth boundary.

2Bt1—29 to 37 inches; yellowish red (5YR 4/6) silty clay; common medium and fine coarse distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few faint clay films on faces of peds; few

fine prominent dark red (10R 3/6) and pale brown (10YR 6/3) coatings on some peds and in some pores; about 3 percent fragments of chert as much as 1 inch across; very strongly acid; clear smooth boundary.

2Bt2—37 to 60 inches; red (2.5YR 4/6) clay; few medium and coarse prominent yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few faint clay films on faces of peds; few fine prominent dark red (10R 3/6) and brown (10YR 5/3) coatings on some peds; about 5 percent fragments of chert 1/4 inch to 2 inches across; strongly acid; clear smooth boundary.

The depth to limestone bedrock is more than 60 inches. The content of chert fragments ranges from 0 to 5 percent in the A and B horizons and from 0 to 15 percent in the 2Bt horizon. Reaction is strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is silt loam.

The BA horizon, if it occurs, has hue of 10YR, value of 5, and chroma of 4 to 6. Most pedons have brownish mottles. Texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 to 8. Some pedons have brownish mottles. Texture is silt loam or silty clay loam.

The E part of the Bt/E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is silt loam.

The 2Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. Most pedons have brownish, reddish, and grayish mottles. Texture is silty clay or clay.

Nesbitt Series

The Nesbitt series consists of very deep, moderately well drained soils. These soils formed in a silty mantle and the underlying limestone residuum. They are on high terraces and uplands in the southern part of the county in the Central Basin. Slopes range from 2 to 6 percent.

The Nesbitt soils are associated with Waynesboro and Harpeth soils. The well drained Waynesboro soils, on adjacent landscapes, are clayey. The well drained Harpeth soils are in landscape positions slightly higher than those of the Nesbitt soils.

Typical pedon of Nesbitt silt loam, 2 to 6 percent slopes, eroded; east of Gallatin, about 6.2 miles along State Highway 25 to Old Union Church, about 2.5 miles south on Harsh Lane, about 3.3 miles south on Robertson Road, 0.2 miles west along a farm road, and 600 feet east of Old Hickory Lake:

Ap—0 to 7 inches; dark brown (7.5YR 3/4) silt loam; medium granular structure; friable; many fine roots; common and medium fine pores; few small black concretions; medium acid; abrupt smooth boundary.

BA—7 to 11 inches; brown (7.5YR 4/4) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium granular structure; friable; common fine roots; common fine pores; few small black concretions; medium acid; abrupt smooth boundary.

Bt1—11 to 24 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few distinct clay films on faces of peds; common small black concretions and stains; strongly acid; clear wavy boundary.

Bt2—24 to 35 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky and angular blocky structure; firm, slightly brittle in about 20 percent of the horizon; few fine roots; common very fine pores; few distinct clay films on faces of peds; many small black concretions and stains; about 3 percent streaks and pockets of pale brown (10YR 6/3) silt; about 25 percent of the horizon is slightly brittle; strongly acid; clear irregular boundary.

2Bt3—35 to 60 inches; yellowish red (5YR 5/6) silty clay loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) and common fine and medium prominent light brownish gray (10YR 6/2) mottles; moderate medium angular and subangular blocky structure; firm, slightly brittle in about 35 percent of the horizon; few fine roots; common very fine pores; many prominent clay films on faces of peds; common large black concretions and stains; strongly acid; clear smooth boundary.

The depth to bedrock is more than 60 inches. Reaction is medium acid or strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 4. Texture is silt loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. Most pedons have brownish mottles. Texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. Most pedons have brownish mottles throughout the profile and mottles that have chroma of 2 or less in the lower part of the Bt horizon. Most pedons have a few eluvial streaks and pockets of pale brown (10YR 6/3) silt. Texture is silt loam or silty clay loam.

The 2Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 6 or 8. It has mottles in shades of brown and gray. Texture is silty clay loam.

Nolin Series

The Nolin series consists of very deep, well drained soils. These soils formed in alluvium. They are on flood plains in the northern part of the county on the Highland Rim. Slopes range from 0 to 2 percent.

The Nolin soils are associated with Bewleyville, Dickson, and Sengtown soils. All of these soils are on nearby uplands. Bewleyville and Sengtown soils have a argillic horizon. Dickson soils have a fragipan.

Typical pedon of Nolin silt loam, occasionally flooded; northeast of Portland, about 150 feet north of West Fork Drakes Creek and 610 feet west of Ford Road:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; many fine and medium pores; few rounded gravel; slightly acid; clear smooth boundary.

Bw1—8 to 28 inches; dark yellowish brown (10YR 4/4) silt loam; few medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky and weak fine granular structure; friable; few fine roots; few fine and medium pores; few faint coatings on faces of peds and in wormcasts; few rounded gravel; slightly acid; clear wavy boundary.

Bw2—28 to 60 inches; dark brown (10YR 3/3) silt loam; weak fine granular and weak medium subangular blocky structure; friable; few fine roots; few fine and medium pores; few faint coatings on faces of peds; few rounded gravel; slightly acid;

The depth to limestone bedrock is more than 60 inches. The content of gravel ranges from 0 to 5 percent. Reaction ranges from medium acid to neutral.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3. Texture is silt loam.

The B horizon and the C horizon, if it occurs, have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Most pedons have brownish mottles. Texture is silt loam or silty clay loam.

Ocana Series

The Ocana series consists of very deep and deep, well drained soils. These soils formed in alluvium. They are on flood plains in the northern part of the county on the Highland Rim and at the base of the Highland Rim Escarpment across the central part of the county. Slopes range from 0 to 2 percent.

The Ocana soils are associated with Captina, Byler, and Mimosa soils. Byler and Captina soils, on higher adjacent terraces, have a fragipan. Mimosa soils, on nearby hillsides, are clayey.

Typical pedon of Ocana gravelly silt loam, bedrock substratum, occasionally flooded; about 4.6 miles northwest of Cottonwood on State Highway 25 to Johnsons Crossroads, about 0.1 mile north on Whitehouse-Portland Road, about 1.5 miles northwest on Maxwell Branch Road, about 115 feet west across a stream:

Ap—0 to 9 inches; dark brown (10YR 4/3) gravelly silt loam; weak fine and medium granular structure; friable; common very fine and few fine roots; about 15 percent gravel as much as 3 inches across; neutral; clear smooth boundary.

Bw1—9 to 18 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine granular and subangular blocky structure; friable; common very fine and few fine roots; common very fine and few fine pores; about 15 percent gravel as much as 3 inches across; neutral; clear smooth boundary.

Bw2—18 to 25 inches; brown (10YR 4/3) gravelly silt loam; few medium faint dark yellowish brown (10YR 4/4) mottles; weak fine subangular blocky structure; friable; common very fine and few fine roots; about 30 percent gravel as much as 3 inches across; neutral; abrupt smooth boundary.

Ab—25 to 30 inches; dark brown (10YR 3/3) gravelly silt loam; weak fine granular structure; friable; common very fine and few fine roots; about 30 percent gravel as much as 3 inches across; slightly acid; abrupt smooth boundary.

C—30 to 48 inches; brown (10YR 4/3) gravelly silt loam; few medium distinct grayish brown (10YR 5/2) and few fine faint dark yellowish brown mottles; massive; friable; few fine roots; about 30 percent gravel as much as 3 inches across; neutral.

R—48 inches; hard gray limestone.

The depth to limestone bedrock ranges from 40 to more than 60 inches. The content of gravel ranges from 15 to 35 percent in each horizon except the C horizon, which contains as much as 60 percent gravel. Reaction ranges from medium acid to neutral.

The A horizon has hue of 10YR, value of 4, and chroma of 3 or 4. Texture is gravelly silt loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Most pedons have brownish mottles. Texture is gravelly silt loam or gravelly loam.

The Ab horizon, if it occurs, has hue of 10YR, value of 3 or 4, and chroma of 3. It is gravelly silt loam.

The C horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 3 or 4. It has brownish and grayish mottles. Texture is gravelly silt loam or gravelly loam.

Sengtown Series

The Sengtown series consists of very deep, well drained soils. These soils formed in material weathered from cherty limestone. They are on uplands on the Highland Rim. Slopes range from 5 to 35 percent.

Sengtown soils are associated with Bewleyville, Dickson, Mountview, and Sulphura soils. Bewleyville and Mountview soils, on adjacent landscapes, are fine-silty. Dickson soils, on adjacent broad ridges, have a fragipan. Sulphura soils, on nearby hillsides, are less than 40 inches deep over rock.

Typical pedon of Sengtown gravelly silt loam, 12 to 20 percent slopes, eroded; 1.0 mile east of Sengtown, 3,500 feet north on a county road, 500 feet south of an intersection, 300 feet east of the road:

Ap—0 to 8 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable; common fine roots; common fine pores; about 22 percent fragments of chert 1/2 inch to 1 inch across; slightly acid; clear smooth boundary.

E—8 to 11 inches; yellowish brown (10YR 5/4) gravelly silt loam; common fine faint brown (10YR 4/3) and few fine prominent strong brown (7.5YR 5/6) mottles; weak fine granular structure; friable; common fine roots; few fine pores; about 18 percent fragments of chert 1/2 inch to 1 inch across; strongly acid; clear smooth boundary.

Bt1—11 to 16 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few fine distinct yellowish brown (10YR 5/6) and yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; few fine pores; few faint clay films on faces of peds; about 22 percent fragments of chert 1/2 inch to 3 inches across; strongly acid; clear smooth boundary.

Bt2—16 to 29 inches; yellowish red (5YR 4/6) gravelly clay; common fine distinct strong brown (7.5YR 5/6) and few fine prominent brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; few distinct clay films on faces of peds; about 20 percent fragments of chert 1/2 inch to 3 inches across; very strongly acid; clear smooth boundary.

Bt3—29 to 42 inches; red (2.5YR 4/6) gravelly clay; common fine prominent light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6), and strong brown (7.5YR 5/6) mottles and few fine distinct yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few prominent clay films on faces of peds; about 22 percent fragments of chert 1/2 inch to 3 inches across; very strongly acid; gradual smooth boundary.

Bt4—42 to 60 inches; red (2.5YR 4/6) gravelly clay; common medium prominent yellowish red (5YR 5/8), reddish yellow (5YR 6/6), and brownish yellow (10YR 6/6) mottles; moderate medium subangular and angular blocky structure; firm; few fine roots; few fine pores; common distinct clay films on faces of peds; about 12 percent fragments of chert 1/2 inch to 3 inches across; very strongly acid.

The depth to limestone bedrock is more than 60 inches. Reaction is very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed. The content of chert fragments ranges from 15 to 35 percent.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Some pedons have brownish mottles. Texture is gravelly silt loam.

The E horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4. Most pedons have brownish mottles. Texture is gravelly silt loam.

The Bt1 horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. Most pedons have brownish and reddish mottles. Texture is gravelly silty clay loam or gravelly silty clay.

The Bt2, Bt3, and Bt4 horizons, if they occur, have hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. Most pedons have brownish, yellowish, and reddish mottles. Texture is gravelly silty clay or gravelly clay.

Sugargrove Series

The Sugargrove series consists of deep, well drained soils. These soils formed in material weathered from interbedded limestone, siltstone, and shale. They are on uplands in the northern part of the county on the Highland Rim. Slopes range from 5 to 20 percent.

Sugargrove soils are associated with Dickson, Mountview, Ocana, and Sulphura soils. Dickson soils, on higher hilltops, have a fragipan. Mountview soils are in landscape positions higher than those of the Sugargrove soils. They are more than 60 inches deep over rock. Ocana soils, along drainageways, are subject to flooding. Sulphura soils, on adjacent hillsides, are less than 40 inches deep over rock.

Typical pedon of Sugargrove gravelly silt loam, 12 to 20 percent slopes, eroded; north of Westmoreland, about 1.8 miles along Pleasant Grove Road from the intersection of U.S. Highway 31E and Pleasant Grove Road, 150 feet west along John Davis Road, and 40 feet north of the road:

Ap—0 to 7 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine and medium roots; common fine pores; about 18 percent fragments of chert and channers of siltstone; strongly acid; clear smooth boundary.

BA—7 to 13 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine granular structure; very friable ; common fine and few medium roots; common fine pores; about 20 percent fragments of chert and channers of siltstone; very strongly acid; clear wavy boundary.

Bt1—13 to 17 inches; yellowish brown (10YR 5/6) gravelly silty clay loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; common fine pores; about 20 percent fragments of chert and channers of siltstone; very strongly acid; clear wavy boundary.

Bt2—17 to 32 inches; yellowish brown (10YR 5/6) gravelly silty clay loam; few medium distinct strong brown (7.5YR 4/6) mottles; moderate fine and medium subangular blocky structure; friable; few fine and medium roots; common fine pores; few fine distinct clay films on faces of peds; about 20 percent fragments of chert and channers of siltstone; very strongly acid; clear wavy boundary.

Bt3/C—32 to 41 inches; yellowish brown (10YR 5/6) very gravelly silty clay in the Bt part and strong brown (7.5YR 5/6) very gravelly silty clay in the C part, which makes up about 40 percent of the horizon; few fine distinct strong brown (7.5YR 4/6) and pale brown (10YR 6/3) and few fine prominent yellowish red (5YR 5/8) mottles in the Bt part and few fine distinct (10YR 5/6) and few fine prominent yellowish red (5YR 5/6) and light brownish gray (10YR 6/2) mottles in the C part; moderate fine and medium subangular blocky structure in the Bt part and massive in the C part; friable in the Bt part and firm in the C part; few fine and medium roots and common fine pores in the Bt part; few fine distinct clay films on faces of peds and on rock fragments in the Bt part; about 40 percent fragments of chert and channers of siltstone throughout the horizon; very strongly acid; clear wavy boundary.

Cr—41 to 49 inches; horizontally bedded, fractured siltstone and chert; common medium distinct clay films on vertical and horizontal faces of rock; very strongly acid.

R—49 inches; hard gray bedrock.

The depth to hard bedrock ranges from 40 to more than 60 inches. Most pedons have a Cr horizon overlying the bedrock. Reaction is strongly acid or very strongly acid, but the surface layer is less acid in areas that have been limed. The content of rock fragments ranges from 10 to 35 percent in the A and E horizons and in the upper part of the Bt horizon. It ranges from 15 to 55 percent in the lower part of the Bt horizon and in the C horizon. The combined thickness of the Bt horizons ranges from 16 to 45 inches. Most pedons have a transitional horizon that has colors and texture similar to the adjacent horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture of the fine-earth fraction is silt loam.

The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 or 6. Some pedons have mottles in shades of brown and red. Texture of the fine-earth fraction is silt loam or silty clay loam.

The lower part of the Bt horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 to 8. It has mottles in shades of brown and red. Texture of the fine-earth fraction is silt loam, silty clay loam, silty clay, or clay.

The C material or the C horizon, if it occurs, have hue of 10YR to 5YR, value of 4 to 6, chroma of 3 to 8, and mottles in shades of red, brown, yellow, or gray. Some pedons do not have a dominant matrix color. Texture of the fine-earth fraction is silt loam, silty clay loam, silty clay, or clay.

The Cr horizon consists of interbedded, highly weathered siltstone and limestone. The bedrock consists of interbedded limestone and siltstone.

The R layer is hard, grayish to brownish limestone.

Sulphura Series

The Sulphura series consists of moderately deep, somewhat excessively drained soils. These soils formed mainly in material that weathered from limestone. They are on uplands in the northern and western part of the county on the escarpment of the Highland Rim. Slopes range from 10 to 65 percent.

The Sulphura soils are associated with Dellrose, Mimosa, and Sugargrove soils. Dellrose soils, on adjacent foot slopes, are more than 60 inches deep over rock. Mimosa soils, on lower hillsides, have a clayey subsoil. Sugargrove soils, on adjacent hilltops, are more than 40 inches deep over rock.

Typical pedon of Sulphura channery silt loam, 25 to 65 percent slopes; east of Goodlettsville, about 1.9 miles east of Madison Creek Church on Long Hollow Pike, about 450 southeast of the road, on a hill:

A—0 to 3 inches; dark brown (10YR 3/3) channery silt loam; weak fine granular structure; friable; common fine roots; common fine pores; about 18 percent channers of limestone and chert; abrupt smooth boundary.

Bw1—3 to 19 inches; yellowish brown (10YR 5/6) very

channery silt loam; weak fine subangular blocky structure; friable; few fine and medium roots; common fine pores; about 40 percent channers of limestone and chert; strongly acid; clear smooth boundary.

Bw2—19 to 27 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; few fine and medium roots; common fine pores; common streaks and pockets of soft weathered relic rock; about 50 percent channers of limestone and chert; strongly acid; clear smooth boundary.

R—27 inches; grayish limestone bedrock.

The depth to limestone bedrock that has a few thin layers of siltstone and shale ranges from 20 to 40 inches. Reaction is strongly acid or medium acid. The content of rock fragments ranges from 15 to 35 percent in the A horizon and from 35 to 60 percent in the Bw horizon.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. Texture is channery silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 or 6. Texture is very channery silt loam or very channery silty clay loam.

The R horizon is dominantly hard limestone that has thin strata of siltstone and shale.

Taft Series

The Taft series consists of very deep, somewhat poorly drained soils. These soils have a fragipan in the subsoil. They formed in a silty mantle over material weathered from limestone. They are on terraces and uplands in the northern part of the county on the Highland Rim. Slopes range from 0 to 2 percent.

Taft soils are associated with Dickson, Guthrie, and Mountview soils. Mountview soils, on higher uplands, do not have a fragipan. The moderately well drained Dickson soils are in landscape positions similar to those of the Taft soils. The poorly drained Guthrie soils are in landscape positions slightly lower than those of the Taft soils.

Typical pedon of Taft silt loam; west of Portland, about 0.6 miles west along Payne Road from the intersection of Payne Road and Collins Road, about 1,800 feet north:

Ap—0 to 8 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; common fine roots; common fine pores; strongly acid; clear smooth boundary.

Bw1—8 to 14 inches; light olive brown (2.5Y 5/4) silt loam; few fine prominent light brownish gray (10YR 6/2) and dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; friable; common fine roots; common fine pores; few black and brown concretions; strongly acid; clear smooth boundary.

Bw2—14 to 23 inches; light olive brown (2.5Y 5/4) silt loam; common medium distinct pale brown (10YR 6/3) and common medium prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; very strongly acid; clear smooth boundary.

Btx/E—23 to 30 inches; light olive brown (2.5Y 5/4) silt loam; many medium prominent yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; weak coarse platy structure parting to moderate medium subangular blocky; firm, slightly brittle; few fine roots; common fine and few medium pores; common light gray (10YR 7/2) and pale brown (10YR 6/3) silt coatings on faces of prisms; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Btx—30 to 60 inches; mottled light olive brown (2.5Y 5/4), gray (10YR 6/1), and yellowish brown (10YR 5/6) silty clay loam; weak very coarse platy structure parting to moderate medium subangular blocky; firm, brittle; few fine roots; few medium pores; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

The depth to bedrock is more than 60 inches. Reaction is strongly acid or very extremely acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is silt loam.

The Bw horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4. It has mottles in shades of brown, yellow, and gray. Texture is silt loam.

The E material has hue of 10YR, value of 6 or 7, and chroma of 2 or 3. Texture is silt loam.

The Btx horizon is mottled in shades of brown, yellow, and gray or has hue of 2.5Y or 10YR, value of 5 or 6, chroma of 4, and mottles in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

Talbott Series

The Talbott series consists of moderately deep, well drained soils. These soils formed in clayey material that weathered from limestone. They are on uplands in the southeastern part of the county in the Central Basin. Slopes range from 3 to 10 percent.

Talbott soils are associated with Barfield, Hampshire, and Inman soils. Barfield soils, on adjacent landscapes, are less than 20 inches deep over rock. Hampshire soils,

on nearby hillsides, are more than 40 inches deep over rock. Inman soils, in higher hillside positions, contain fragments of sandy limestone.

Typical pedon of Talbott silt loam, 3 to 10 percent slopes, rocky; east of Gallatin along State Highway 25 to the intersection of Corum Hill Road at Castalian Springs, about 4.4 miles south along Corum Hill Road, 800 feet south along a farm road, 110 feet west of the road:

Ap—0 to 5 inches; brown (7.5YR 4/4) silt loam; moderate medium and fine granular structure; friable; common very fine and fine roots; common very fine and fine pores; common small black concretions; about 5 percent chert gravel; strongly acid; abrupt smooth boundary.

Bt1—5 to 12 inches; yellowish red (5YR 4/6) clay; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; common very fine and fine roots; common very fine and fine pores; few faint clay films on faces of peds; common small black concretions; few black stains on faces of peds; about 5 percent chert gravel; medium acid; clear wavy boundary.

Bt2—12 to 20 inches; red (2.5YR 4/6) clay; common fine distinct reddish brown (5YR 4/4) mottles; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine pores; common prominent clay films on faces of peds; common small black concretions; few black stains on faces of peds; about 2 percent chert gravel; medium acid; clear wavy boundary.

Bt3—20 to 30 inches; red (2.5YR 4/6) clay; few fine distinct yellowish red (5YR 4/6), few fine prominent yellowish brown (10YR 5/6), and many coarse prominent strong brown (7.5YR 5/6) mottles that are dominantly in the lower part of the horizon; moderate medium and fine angular blocky structure; very firm; few fine roots; few fine pores; many prominent clay films on faces of peds; few black stains on faces of peds; less than 1 percent chert gravel; medium acid; clear wavy boundary.

R—30 inches; limestone bedrock.

The depth to limestone bedrock ranges from 20 to 40 inches. The content of fragments ranges from 0 to 5 percent in the upper part of the solum. Reaction is strongly acid or medium acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 or 4. Texture is silt loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. Some pedons have reddish or brownish mottles. Texture is silty clay or clay.

The R horizon is hard, grayish limestone.

Tarklin Series

The Tarklin series consists of very deep, moderately well drained soils that have a fragipan in the subsoil. These soils formed in gravelly alluvium and colluvium. They are on terraces and toe slopes in the northern part of the county on the Highland Rim. Slopes range from 2 to 6 percent.

Tarklin soils are associated with Ocana, Sugargrove, and Sulphura soils. All of these soils have a fragipan. Ocana soils are on adjacent flood plains, and Sugargrove and Sulphura soils are on nearby higher hillsides.

Typical pedon of Tarklin gravelly silt loam, 2 to 6 percent slopes; north of Oak Grove, about 2.1 miles along Dobbins Pike, about 1.2 miles east along Simpson Road, 0.5 miles east along Horace Brown Road, 1,700 feet along Luly Brown Road, 1,200 feet east of the road:

Ap—0 to 8 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable; common very fine and few fine roots; common fine and medium pores; about 15 percent subrounded fragments of chert as much as 2 inches across; medium acid; abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish brown (10YR 5/6) gravelly silt loam; moderate fine and medium subangular blocky structure; friable; common very fine and fine roots; common fine pores; few faint clay films on faces of peds; about 15 percent subrounded fragments of chert as much as 2 inches across; strongly acid; gradual smooth boundary.

Bt2—15 to 20 inches; yellowish brown (10YR 5/4) gravelly silt loam; few fine faint yellowish brown mottles; moderate fine and medium subangular blocky structure; friable; common fine roots; common fine pores; few faint clay films on faces of peds; few thin seams and pockets of pale brown (10YR 6/3) silt; about 25 percent subrounded fragments of chert as much as 2 inches across; strongly acid; abrupt wavy boundary.

Btx1—20 to 46 inches; pale brown (10YR 6/3) gravelly silt loam; common fine distinct yellowish brown (10YR 5/6) and common fine prominent light gray (10YR 7/2) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; very firm, brittle; few faint clay films on faces of peds; few thin seams and pockets of pale brown (10YR 6/3) silt; common fine black concretions and stains; about 35 percent subrounded fragments of chert as much as 2 inches across; strongly acid; gradual wavy boundary.

C—46 to 60 inches; mottled light brownish gray (10YR 6/2), yellowish brown (10YR 5/6), and yellowish red

(5YR 4/6) very gravelly silt loam; massive; about 50 percent subrounded fragments of chert as much as 3 inches across; strongly acid.

The depth to limestone bedrock is more than 60 inches. The content of subrounded chert fragments ranges from 15 to 35 percent in the A, Bt, and Btx horizons. It is as much as 60 percent in the C horizon. Reaction ranges from extremely acid to strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture is gravelly silt loam.

The Bt horizon has hue of 10YR, value of 5, and chroma of 4 to 6. Some pedons have brownish mottles. Texture is gravelly silt loam or gravelly silty clay loam.

The Bx horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It has brownish and grayish mottles. Texture is gravelly silt loam or gravelly loam.

The C horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It has mottles in shades of brown, red, or gray or is mottled in shades of gray and brown. Texture is very gravelly silt loam or gravelly loam.

Waynesboro Series

The Waynesboro series consists of very deep, well drained soils. These soils formed in old alluvium. They are on uplands in the southern part of the county in the Central Basin. Slopes range from 5 to 20 percent.

Waynesboro soils are associated with Nesbitt soils. Nesbitt soils are in landscape positions similar to those of the Waynesboro soils or are higher on the landscape. They are less clayey than the Waynesboro soils.

Typical pedon of Waynesboro clay loam, 5 to 12 percent slopes, eroded; about 6.2 miles east of Gallatin along State Highway 25 to Old Union Church, about 2.5 miles south on Harsh Lane, about 4.1 miles south along Robertson Road, 215 feet south of Robertson Road, about 325 feet southeast of a powerline:

Ap—0 to 8 inches; brown (7.5YR 4/4) clay loam; moderate medium granular structure; friable; common fine roots; common fine pores; few small black concretions; strongly acid; abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; few distinct clay films on faces of peds; few small black concretions; strongly acid; clear wavy boundary.

Bt2—15 to 30 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; common distinct clay films on faces of peds; few small black concretions and stains; strongly acid; clear smooth boundary.

Bt3—30 to 37 inches; red (2.5YR 4/6) clay; common fine distinct yellowish red (5YR 5/6) and common fine prominent yellowish brown (10YR 5/6) mottles; moderate medium angular blocky structure; friable; few fine roots; common fine pores; many prominent clay films on faces of peds; common small black concretions and stains; strongly acid; clear smooth boundary.

Bt4—37 to 60 inches; red (2.5YR 4/6) clay loam; common fine distinct yellowish red (5YR 5/6) and prominent yellowish brown (10YR 5/6) and pale brown (10YR 6/3) mottles; moderate medium angular blocky structure; friable; few fine roots; common fine pores; many prominent clay films on faces of peds; common small black concretions and stains; strongly acid; clear smooth boundary.

The depth to bedrock is more than 6 feet. Reaction is very strongly acid or strongly acid, but the surface layer is less acid in areas that have been limed.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 or 4. Texture is clay loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. Most pedons have brownish or grayish mottles in the lower part. Texture is clay loam or clay.

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Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 2
Low	2 to 4
Moderate	4 to 6
High	6 or more

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:
Loose.—Noncoherent when dry or moist; does not hold together in a mass.
Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not

inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of the human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated rock (unweathered bedrock)

beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Large stones (in tables). Rock fragments that are 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the

soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1955-84 at Portland, Tennessee)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	43.0	23.5	33.3	70	7	17	4.27	1.72	6.01	7	4.6
February	47.8	26.9	37.4	74	0	28	3.95	1.89	5.21	7	2.4
March	57.5	35.7	46.6	81	14	98	5.17	2.61	7.31	8	.9
April	69.5	46.1	57.8	86	26	253	4.82	2.76	6.46	8	.0
May	77.2	54.0	65.6	90	33	484	5.00	3.27	6.47	8	.0
June	84.5	62.0	73.3	95	46	699	4.44	1.90	6.44	6	.0
July	87.7	65.7	76.7	97	52	828	4.27	2.51	5.74	7	.0
August	86.9	64.0	75.5	96	49	791	3.75	1.75	5.32	6	.0
September	81.4	57.7	69.6	94	38	588	3.22	1.38	4.76	5	.0
October	71.0	45.7	58.4	87	26	279	3.01	1.27	4.39	5	.0
November	58.5	36.6	47.6	81	14	61	4.25	2.36	5.88	6	.5
December	48.3	28.5	38.4	71	2	31	4.51	2.17	6.24	7	1.4
Yearly:											
Average	67.8	45.5	56.7	---	---	-----	-----	-----	----	---	-----
Extreme	---	---	---	97	2	-----	-----	-----	----	---	-----
Total	---	---	---	---	---	4,157	50.66	42.61	58.75	80	9.8

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1955-84 at Portland, Tennessee)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 9	Apr. 12	Apr. 29
2 years in 10 later than--	Apr. 2	Apr. 7	Apr. 23
5 years in 10 later than--	Mar. 21	Mar. 29	Apr. 12
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 28	Oct. 15	Oct. 2
2 years in 10 earlier than--	Nov. 3	Oct. 21	Oct. 8
5 years in 10 earlier than--	Nov. 13	Nov. 2	Oct. 21

TABLE 3.--GROWING SEASON

(Recorded in the period 1955-84 at Portland, Tennessee)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	210	192	167
8 years in 10	219	20	175
5 years in 10	237	217	191
2 years in 10	255	233	207
1 year in 10	264	242	215

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AmB	Armour silt loam, 2 to 5 percent slopes	1,700	0.5
Ar	Arrington silt loam, occasionally flooded	5,900	1.7
BaC	Barfield-Rock outcrop complex, 5 to 20 percent slopes	13,740	3.9
BeB2	Bewleyville silty clay loam, 2 to 5 percent slopes, eroded	12,260	3.5
BeC2	Bewleyville silty clay loam, 5 to 12 percent slopes, eroded	4,510	1.3
ByB	Byler silt loam, 1 to 4 percent slopes	5,100	1.5
CaB	Captina silt loam, 1 to 4 percent slopes	1,740	0.5
DeD2	Dellrose gravelly silt loam, 12 to 20 percent slopes, eroded	2,360	0.7
DeE2	Dellrose gravelly silt loam, 20 to 40 percent slopes, eroded	2,520	0.7
DkB2	Dickson silt loam, 2 to 5 percent slopes, eroded	28,530	8.2
Eg	Egam silt loam, occasionally flooded	1,370	0.4
EtB	Etowah silt loam, 2 to 5 percent slopes	1,000	0.3
EtC2	Etowah silt loam, 5 to 12 percent slopes, eroded	240	0.1
Go	Godwin silt loam, occasionally flooded	920	0.3
Gu	Guthrie silt loam, ponded	3,300	0.9
HaC2	Hampshire silt loam, 5 to 12 percent slopes, eroded	670	0.2
HaD2	Hampshire silt loam, 12 to 20 percent slopes, eroded	1,790	0.5
HhB2	Harpeth silt loam, 2 to 5 percent slopes, eroded	23,590	6.8
HhC2	Harpeth silt loam, 5 to 10 percent slopes, eroded	14,720	4.2
HrB	Harpeth-Urban land complex, 2 to 8 percent slopes	6,130	1.8
HuB	Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded	1,960	0.6
InD2	Inman flaggy silty clay loam, 10 to 20 percent slopes, eroded	1,660	0.5
InE2	Inman flaggy silty clay loam, 20 to 35 percent slopes, eroded	1,760	0.5
Me	Melvin silt loam, frequently flooded	730	0.2
MmB2	Mimosa silt loam, 2 to 5 percent slopes, eroded	2,340	0.7
MmC2	Mimosa silt loam, 5 to 12 percent slopes, eroded	17,100	4.9
MmD2	Mimosa silt loam, 12 to 20 percent slopes, eroded	9,480	2.7
MmD3	Mimosa silty clay, 8 to 20 percent slopes, severely eroded	10,660	3.0
MmE2	Mimosa silt loam, 20 to 35 percent slopes, eroded	1,550	0.4
MnC2	Mimosa silt loam, 5 to 20 percent slopes, eroded, rocky	3,020	0.9
MrE	Mimosa-Rock outcrop complex, 20 to 45 percent slopes	10,650	3.1
MuC	Mimosa-Urban land complex, 5 to 12 percent slopes	6,400	1.8
MvB2	Mountview silt loam, 2 to 5 percent slopes, eroded	8,420	2.4
MvC2	Mountview silt loam, 5 to 12 percent slopes, eroded	13,410	3.8
NeB2	Nesbitt silt loam, 2 to 6 percent slopes, eroded	500	0.1
No	Nolin silt loam, occasionally flooded	3,700	1.1
Ob	Ocana gravelly silt loam, occasionally flooded	200	0.1
Oc	Ocana gravelly silt loam, bedrock substratum, occasionally flooded	4,860	1.3
Pd	Pit-Dumps complex	390	0.1
SeC2	Sengtown gravelly silt loam, 5 to 12 percent slopes, eroded	19,000	5.5
SeD2	Sengtown gravelly silt loam, 12 to 20 percent slopes, eroded	11,490	3.3
SeE2	Sengtown gravelly silt loam, 20 to 35 percent slopes, eroded	820	0.2
Sf	Slickens	200	0.1
SgC2	Sugargrove gravelly silt loam, 5 to 12 percent slopes, eroded	8,120	2.3
SgD2	Sugargrove gravelly silt loam, 12 to 20 percent slopes, eroded	20,290	5.7
SuD	Sulphura channery silt loam, 10 to 25 percent slopes	7,800	2.2
SUF	Sulphura channery silt loam, 25 to 65 percent slopes	31,360	9.1
Ta	Taft silt loam	4,350	1.2
TbC	Talbott silt loam, 3 to 10 percent slopes, rocky	1,390	0.4
TvB	Tarklin gravelly silt loam, 2 to 6 percent slopes	930	0.3
UD	Udorthents, 2 to 8 percent slopes	640	0.2
WaC2	Waynesboro clay loam, 5 to 12 percent slopes, eroded	930	0.3
WaD2	Waynesboro clay loam, 12 to 20 percent slopes, eroded	560	0.2
	Water	9,600	2.8
	Total	348,100	100.0

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
AmB	Armour silt loam, 2 to 5 percent slopes
Ar	Arrington silt loam, occasionally flooded
BeB2	Bewleyville silty clay loam, 2 to 5 percent slopes, eroded
ByB	Byler silt loam, 1 to 4 percent slopes
CaB	Captina silt loam, 1 to 4 percent slopes
DkB2	Dickson silt loam, 2 to 5 percent slopes, eroded
Eg	Egam silt loam, occasionally flooded
EtB	Etowah silt loam, 2 to 5 percent slopes
Go	Godwin silt loam, occasionally flooded
HhB2	Harpeth silt loam, 2 to 5 percent slopes, eroded
HuB	Humphreys gravelly silt loam, 2 to 8 percent slopes, rarely flooded
MvB2	Mountview silt loam, 2 to 5 percent slopes, eroded
NeB2	Nesbitt silt loam, 2 to 6 percent slopes, eroded
No	Nolin silt loam, occasionally flooded
Ob	Ocana gravelly silt loam, occasionally flooded
Oc	Ocana gravelly silt loam, bedrock substratum, occasionally flooded
Ta	Taft silt loam
TvB	Tarklin gravelly silt loam, 2 to 6 percent slopes

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Tobacco	Wheat	Alfalfa hay	Tall fescue-ladino
		Bu	Bu	Lbs	Bu	Tons	AUM*
AmB---------- Armour	IIe	125	43	2,900	53	4.0	7.5
Ar---------- Arrington	IIw	130	40	---	55	---	7.5
BaC**---------- Barfield-Rock outcrop	VIIs	---	---	---	---	---	---
BeB2---------- Bewleyville	IIe	110	38	2,550	53	3.6	7.5
BeC2---------- Bewleyville	IIIe	---	30	2,350	45	3.0	6.5
ByB---------- Byler	IIw	85	35	2,500	40	---	7.5
CaB---------- Captina	IIe	85	35	2,500	40	---	7.5
DeD2---------- Dellrose	IVe	---	---	---	---	---	6.0
DeE2---------- Dellrose	VIe	---	---	---	---	---	5.0
DkB2---------- Dickson	IIe	90	35	2,500	40	---	7.5
Eg---------- Egam	IIw	110	40	---	50	---	7.5
EtB---------- Etowah	IIe	110	40	2,500	50	3.4	7.0
EtC2---------- Etowah	IIIe	---	30	2,250	42	3.0	6.5
Go---------- Godwin	IIIw	---	---	---	---	---	6.0
Gu---------- Guthrie	Vw	---	---	---	---	---	---
HaC2---------- Hampshire	IIIe	---	---	2,200	40	---	6.0
HaD2---------- Hampshire	IVe	---	---	---	---	---	5.0
HhB2---------- Harpeth	IIe	120	35	2,500	45	3.8	7.5
HhC2---------- Harpeth	IIIe	---	30	2,200	45	3.0	7.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Tobacco	Wheat	Alfalfa hay	Tall fescue-ladino
		Bu	Bu	Lbs	Bu	Tons	AUM*
HrB**-- Harpeth-Urban land	IIe	---	---	---	---	---	---
HuB-- Humphreys	IIe	90	35	2,300	50	---	6.5
InD2-- Inman	VIs	---	---	---	---	---	3.0
InE2-- Inman	VIIs	---	---	---	---	---	2.5
Me-- Melvin	IVw	---	---	---	---	---	---
MmB2-- Mimosa	IIIe	---	---	1,400	45	---	4.5
MmC2-- Mimosa	IVe	---	---	1,250	40	---	4.0
MmD2-- Mimosa	VIe	---	---	---	---	---	3.5
MmD3-- Mimosa	VIe	---	---	---	---	---	3.0
MmE2-- Mimosa	VIIe	---	---	---	---	---	3.0
MnC2-- Mimosa	VIs	---	---	---	---	---	3.5
MrE**-- Mimosa-Rock outcrop	VIIs	---	---	---	---	---	3.0
MuC**-- Mimosa-Urban land	IVe	---	---	---	---	---	---
MvB2-- Mountview	IIe	95	30	2,350	50	3.5	7.5
MvC2-- Mountview	IIIe	90	30	2,200	45	3.0	6.5
NeB2-- Nesbitt	IIe	110	40	1,900	45	---	7.5
No-- Nolin	IIw	115	38	---	40	---	7.5
Ob, Oc-- Ocana	IIs	---	---	---	---	---	7.0
Pd**. Pits-dumps							

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Tobacco	Wheat	Alfalfa hay	Tall fescue-ladino
		Bu	Bu	Lbs	Bu	Tons	AUM*
SeC2---------- Sengtown	IIIe	95	30	2,000	40	---	7.0
SeD2---------- Sengtown	IVe	70	---	1,800	---	---	6.5
SeE2---------- Sengtown	VIe	---	---	---	---	---	5.5
Sf**. Slickens							
SgC2---------- Sugargrove	IIIe	80	25	2,200	35	---	5.5
SgD2---------- Sugargrove	IVe	---	---	1,800	---	---	5.0
SuD---------- Sulphura	VIs	---	---	---	25	---	---
SUF---------- Sulphura	VIIs	---	---	---	---	---	---
Ta---------- Taft	IIIw	---	35	---	40	---	6.5
TbC---------- Talbott	IVs	---	---	1,600	40	---	4.5
TvB---------- Tarklin	IIe	80	30	---	40	---	6.5
UD. Udorthents							
WaC2---------- Waynesboro	IIIe	90	30	2,200	40	---	6.8
WaD2---------- Waynesboro	IVe	80	---	---	---	---	6.2

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
							Cu ft/ acre/yr	
AmB---------- Armour	Slight	Slight	Slight	Slight	Southern red oak----	78	60	Yellow-poplar, black walnut.
					White oak----------	78	60	
					Yellow-poplar-------	92	93	
Ar---------- Arrington	Slight	Slight	Slight	Slight	Yellow-poplar-------	105	115	Yellow-poplar, black walnut.
					White oak----------	80	62	
					Southern red oak----	80	62	
					Black walnut--------	---	---	
BaC**:								
Barfield-------	Slight	Slight	Severe	Severe	Eastern redcedar----	35	37	Eastern redcedar.
Rock outcrop.								
BeB2, BeC2------ Bewleyville	Slight	Slight	Slight	Slight	Southern red oak----	76	58	Yellow-poplar, black walnut.
					Yellow-poplar-------	95	98	
					White oak----------	73	55	
ByB---------- Byler	Slight	Slight	Slight	Moderate	Yellow-poplar-------	90	90	Yellow-poplar, loblolly pine.
					White oak----------	65	47	
CaB---------- Captina	Slight	Slight	Slight	Moderate	Yellow-poplar-------	90	90	Yellow-poplar, loblolly pine.
					Southern red oak----	65	47	
					White oak----------	65	47	
DeD2, DeE2------ Dellrose	Moderate	Moderate	Slight	Slight	Yellow-poplar-------	98	104	Yellow-poplar, black walnut.
					Southern red oak----	76	58	
DkB2---------- Dickson	Slight	Slight	Slight	Moderate	Yellow-poplar-------	92	93	Loblolly pine, yellow-poplar.
					White oak----------	65	47	
Eg---------- Egam	Slight	Slight	Slight	Slight	Yellow-poplar-------	100	107	Yellow-poplar, black walnut.
					Southern red oak----	80	62	
EtB, EtC2------- Etowah	Slight	Slight	Slight	Slight	Yellow-poplar-------	90	90	Yellow-poplar, black walnut.
					Southern red oak----	72	54	
Go---------- Godwin	Slight	Moderate	Moderate	Slight	Water oak----------	90	86	Yellow-poplar, loblolly pine.
					Sweetgum-----------	90	106	
					Green ash----------	---	---	
Gu---------- Guthrie	Slight	Severe	Severe	Moderate	Sweetgum-----------	90	106	Sweetgum.
					Willow oak---------	85	80	
HaC2, HaD2------ Hampshire	Moderate	Slight	Slight	Slight	Southern red oak----	70	52	Yellow-poplar, loblolly pine.
					Eastern redcedar----	50	64	
HhB2, HhC2------ Harpeth	Slight	Slight	Slight	Slight	Yellow-poplar-------	95	98	Yellow-poplar, black walnut.
					Southern red oak----	80	62	
					Black walnut--------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
							Cu ft/ acre/yr	
HrB**:								
Harpeth	Slight	Slight	Slight	Slight	Yellow-poplar	95	98	Yellow-poplar, black walnut.
					Southern red oak	80	62	
					Black walnut	---	---	
Urban land.								
HuB	Slight	Slight	Slight	Slight	Yellow-poplar	100	107	Yellow-poplar, black walnut.
Humphreys					Southern red oak	70	52	
					Black walnut	---	---	
InD2, InE2	Moderate	Moderate	Moderate	Slight	Southern red oak	60	43	Loblolly pine, shortleaf pine, black locust.
Inman					Eastern redcedar	50	64	
Me	Slight	Severe	Severe	Moderate	Sweetgum	89	103	Sweetgum.
Melvin					Green ash	---	---	
					Hackberry	---	---	
					Hickory	---	---	
MmB2, MmC2	Slight	Slight	Slight	Slight	Southern red oak	65	47	Loblolly pine, eastern redcedar.
Mimosa					Eastern redcedar	45	52	
MmD2	Moderate	Moderate	Moderate	Slight	Southern red oak	65	47	Loblolly pine.
Mimosa					Eastern redcedar	45	52	
MmD3	Moderate	Moderate	Severe	Slight	Southern red oak	65	43	Loblolly pine, eastern redcedar.
Mimosa					Eastern redcedar	40	43	
MmE2	Moderate	Moderate	Slight	Slight	Southern red oak	65	47	Loblolly pine, eastern redcedar.
Mimosa					Eastern redcedar	45	52	
MnC2	Moderate	Slight	Slight	Slight	Southern red oak	65	47	Loblolly pine, eastern redcedar.
Mimosa					Eastern redcedar	45	52	
MrE**:								
Mimosa	Moderate	Moderate	Slight	Slight	Southern red oak	65	47	Loblolly pine, eastern redcedar.
					Eastern redcedar	45	52	
Rock outcrop.								
MuC**:								
Mimosa	Slight	Slight	Slight	Slight	Southern red oak	65	47	Loblolly pine.
					Eastern redcedar	45	52	
Urban land.								
MvB2, MvC2	Slight	Slight	Slight	Slight	Southern red oak	72	54	Black walnut, yellow-poplar.
Mountview					Yellow-poplar	90	90	
NeB2	Slight	Slight	Slight	Slight	Southern red oak	72	54	Yellow-poplar, black walnut.
Nesbitt								

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
							Cu ft/ acre/yr	
No Nolin	Slight	Slight	Slight	Slight	Yellow-poplar Sweetgum American sycamore	107 92 ---	119 112 ---	Yellow-poplar, black walnut.
Ob, Oc Ocana	Slight	Slight	Slight	Slight	Yellow-poplar White oak	100 80	107 62	Yellow-poplar, black walnut.
SeC2 Sengtown	Slight	Slight	Slight	Slight	Southern red oak Yellow-poplar	70 90	52 90	Loblolly pine.
SeD2, SeE2 Sengtown	Moderate	Moderate	Slight	Slight	Southern red oak Yellow-poplar	70 90	52 90	Loblolly pine.
SgC2, SgD2 Sugargrove	Slight	Slight	Slight	Slight	Southern red oak Virginia pine	66 55	48 80	Loblolly pine.
SuD Sulphura	Moderate	Moderate	Moderate	Moderate	White oak Eastern redcedar	60 35	43 37	Eastern redcedar, loblolly pine.
SUF Sulphura	Severe	Severe	Moderate	Moderate	White oak Eastern redcedar	60 35	43 37	Eastern redcedar, loblolly pine.
Ta Taft	Slight	Moderate	Moderate	Moderate	Yellow-poplar White oak Sweetgum	90 60 80	90 43 79	Loblolly pine.
TbC Talbott	Slight	Slight	Slight	Slight	Southern red oak Eastern redcedar	65 40	47 43	Loblolly pine, eastern redcedar.
TvB Tarklin	Slight	Slight	Slight	Slight	White oak Yellow-poplar Eastern redcedar	62 --- ---	45 --- ---	Loblolly pine, yellow-poplar.
WaC2, WaD2 Waynesboro	Slight	Slight	Slight	Slight	Yellow-poplar Southern red oak	90 70	90 52	Loblolly pine, yellow-poplar.

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
AmB Armour	Slight	Slight	Moderate: slope.	Slight.
Ar Arrington	Severe: flooding.	Slight	Moderate: flooding.	Slight.
BaC*: Barfield	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Rock outcrop.				
BeB2 Bewleyville	Slight	Slight	Moderate: slope.	Slight.
BeC2 Bewleyville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
ByB Byler	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: erodes easily.
CaB Captina	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight.
DeD2 Dellrose	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
DeE2 Dellrose	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
DkB2 Dickson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.
Eg Egam	Severe: flooding.	Moderate: percs slowly.	Moderate: flooding, percs slowly.	Slight.
EtB Etowah	Slight	Slight	Moderate: slope, small stones.	Slight.
EtC2 Etowah	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Go Godwin	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Gu Guthrie	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
HaC2 Hampshire	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.
HaD2 Hampshire	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
HhB2 Harpeth	Slight	Slight	Moderate: slope.	Severe: erodes easily.
HhC2 Harpeth	Slight	Slight	Severe: slope.	Severe: erodes easily.
HrB*: Harpeth	Slight	Slight	Moderate: slope.	Severe: erodes easily.
Urban land.				
HuB Humphreys	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight.
InD2 Inman	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: large stones, slope.
InE2 Inman	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.
Me Melvin	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
MmB2 Mimosa	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight.
MmC2 Mimosa	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.
MmD2 Mimosa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
MmD3 Mimosa	Severe: too clayey.	Severe: too clayey.	Severe: slope, too clayey.	Severe: too clayey.
MmE2 Mimosa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.
MnC2 Mimosa	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
MrE*: Mimosa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.
Rock outcrop.				
MuC*: Mimosa	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.
Urban land.				
MvB2 Mountview	Slight	Slight	Moderate: slope.	Severe: erodes easily.
MvC2 Mountview	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
NeB2 Nesbitt	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight.
No Nolin	Severe: flooding.	Slight	Slight	Severe: erodes easily.
Ob, Oc Ocana	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight.
Pd*. Pits-dumps				
SeC2 Sengtown	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight.
SeD2 Sengtown	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
SeE2 Sengtown	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Sf*. Slickens				
SgC2 Sugargrove	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
SgD2 Sugargrove	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
SuD Sulphura	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
SUF Sulphura	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Ta Taft	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.
TbC Talbott	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight.
TvB Tarklin	Moderate: small stones.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.
UD*. Udorthents				
WaC2 Waynesboro	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
WaD2 Waynesboro	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--	
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife
AmB---- Armour	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
Ar---- Arrington	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
BaC*: Barfield----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor.
Rock outcrop.									
BeB2---- Bewleyville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
BeC2---- Bewleyville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
ByB---- Byler	Good	Good	Good	Good	Good	Poor	Poor	Good	Good.
CaB---- Captina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good.
DeD2---- Dellrose	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
DeE2---- Dellrose	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
DkB2---- Dickson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
Eg---- Egam	Good	Good	Good	Good	Good	Poor	Poor	Good	Good.
EtB---- Etowah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
EtC2---- Etowah	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
Go---- Godwin	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good.
Gu---- Guthrie	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor	Very poor.
HaC2---- Hampshire	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
HaD2---- Hampshire	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
HhB2---- Harpeth	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--	
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife
HhC2---- Harpeth	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
HrB*:									
Harpeth----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
Urban land.									
HuB---- Humphreys	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
InD2---- Inman	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor.
InE2---- Inman	Very poor.	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor.
Me---- Melvin	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor.
MmB2---- Mimosa	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
MmC2---- Mimosa	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
MmD2---- Mimosa	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
MmD3---- Mimosa	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
MmE2---- Mimosa	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
MnC2---- Mimosa	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
MrE*:									
Mimosa----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
Rock outcrop.									
MuC*:									
Mimosa----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
Urban land.									
MvB2---- Mountview	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
MvC2---- Mountview	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
NeB2---- Nesbitt	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--	
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife
No Nolin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
Ob, Oc Ocana	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
Pd*. Pits-dumps									
SeC2 Sengtown	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
SeD2 Sengtown	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
SeE2 Sengtown	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
Sf*. Slickens									
SgC2 Sugargrove	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
SgD2 Sugargrove	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good.
SuD Sulphura	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair.
SUF Sulphura	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair.
Ta Taft	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good.
TbC Talbott	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
TvB Tarklin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good.
UD*. Udorthents									
WaC2 Waynesboro	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.
WaD2 Waynesboro	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
AmB Armour	Slight	Slight	Slight	Slight	Severe: low strength.
Ar Arrington	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
BaC*: Barfield	Severe: depth to rock.	Severe: shrink-swell, depth to rock.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, shrink-swell, low strength.
Rock outcrop.					
BeB2 Bewleyville	Slight	Slight	Slight	Slight	Severe: low strength.
BeC2 Bewleyville	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.
ByB Byler	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.
CaB Captina	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.
DeD2, DeE2 Dellrose	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DkB2 Dickson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.
Eg Egam	Moderate: too clayey, wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.
EtB Etowah	Slight	Slight	Slight	Slight	Moderate: low strength.
EtC2 Etowah	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
Go Godwin	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.
Gu Guthrie	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
HaC2---------- Hampshire	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.
HaD2---------- Hampshire	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
HhB2---------- Harpeth	Slight----------	Slight----------	Slight----------	Slight----------	Severe: low strength.
HhC2---------- Harpeth	Moderate: slope.	Slight----------	Slight----------	Moderate: slope.	Severe: low strength.
HrB*: Harpeth----------	Moderate: too clayey.	Slight----------	Slight----------	Moderate: slope.	Severe: low strength.
Urban land.					
HuB---------- Humphreys	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
InD2, InE2-------- Inman	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
Me---------- Melvin	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.
MmB2---------- Mimosa	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell.	Severe: low strength.
MmC2---------- Mimosa	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.
MmD2---------- Mimosa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
MmD3---------- Mimosa	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.
MmE2---------- Mimosa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
MnC2---------- Mimosa	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
MrE*:					
Mimosa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
Rock outcrop.					
MuC*:					
Mimosa	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.
Urban land.					
MvB2 Mountview	Slight	Slight	Moderate: shrink-swell.	Slight	Severe: low strength.
MvC2 Mountview	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.
NeB2 Nesbitt	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Severe: low strength.
No Nolin	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.
Ob Ocana	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Oc Ocana	Moderate: depth to rock, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Pd*. Pits-dumps					
SeC2 Sengtown	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.
SeD2, SeE2 Sengtown	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.
Sf*. Slickens					
SgC2 Sugargrove	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
SgD2 Sugargrove	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SuD, SUF Sulphura	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Ta Taft	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
TbC---------- Talbott	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: low strength.
TvB---------- Tarklin	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.
UD*. Udorthents					
WaC2---------- Waynesboro	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
WaD2---------- Waynesboro	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AmB Armour	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Ar Arrington	Severe: flooding.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Good.
BaC*: Barfield	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
Rock outcrop.					
BeB2 Bewleyville	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Poor: too clayey, hard to pack.
BeC2 Bewleyville	Moderate: slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
ByB Byler	Severe: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey, small stones.
CaB Captina	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Moderate: wetness.	Poor: small stones.
DeD2, DeE2 Dellrose	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: small stones, slope.
DkB2 Dickson	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Eg Egam	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
EtB Etowah	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
EtC2 Etowah	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Good.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Go Godwin	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Gu Guthrie	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
HaC2 Hampshire	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
HaD2 Hampshire	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
HhB2 Harpeth	Slight	Moderate: slope.	Slight	Slight	Good.
HhC2 Harpeth	Moderate: slope.	Severe: slope.	Slight	Slight	Good.
HrB*: Harpeth	Slight	Moderate: slope.	Slight	Slight	Good.
Urban land.					
HuB Humphreys	Moderate: flooding, wetness.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Good.
InD2, InE2 Inman	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
Me Melvin	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
MmB2 Mimosa	Severe: percs slowly.	Moderate: depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
MmC2 Mimosa	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
MmD2 Mimosa	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MmD3 Mimosa	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
MmE2 Mimosa	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MnC2 Mimosa	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
MrE*: Mimosa	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Rock outcrop.					
MuC*: Mimosa	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
Urban land.					
MvB2 Mountview	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
MvC2 Mountview	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
NeB2 Nesbitt	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
No Nolin	Severe: flooding, wetness.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
Ob Ocana	Severe: flooding.	Severe: seepage, flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Poor: small stones.
Oc Ocana	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, depth to rock, seepage.	Severe: flooding, seepage.	Poor: small stones.
Pd*. Pits-dumps					
SeC2 Sengtown	Moderate: percs slowly.	Severe: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SeD2, SeE2 Sengtown	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack.
Sf*. Slickens					
SgC2 Sugargrove	Moderate: depth to rock, percs slowly, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: slope.
SgD2 Sugargrove	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: slope.
SuD, SUF Sulphura	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Ta Taft	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
TbC Talbott	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
TvB Tarklin	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Moderate: wetness.	Good.
UD*. Udorthents					
WaC2 Waynesboro	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
WaD2 Waynesboro	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AmB Armour	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ar Arrington	Fair: low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Good.
BaC*: Barfield	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, small stones.
Rock outcrop.				
BeB2 Bewleyville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
BeC2 Bewleyville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer, slope.
ByB Byler	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim.
CaB Captina	Fair: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
DeD2 Dellrose	Fair: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DeE2 Dellrose	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DkB2 Dickson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
Eg Egam	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
EtB Etowah	Fair: low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
EtC2 Etowah	Fair: low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey, slope.
Go Godwin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Gu Guthrie	Poor: low strength, wetness.	Severe: excess fines.	Severe: excess fines.	Severe: wetness.
HaC2 Hampshire	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, area reclaim.
HaD2 Hampshire	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, area reclaim, slope.
HhB2, HhC2 Harpeth	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
HrB*: Harpeth	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Urban land.				
HuB Humphreys	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
InD2 Inman	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones, slope.
InE2 Inman	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones, slope.
Me Melvin	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MmB2, MmC2 Mimosa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MmD2 Mimosa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
MmD3 Mimosa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MmE2 Mimosa	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MnC2 Mimosa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MrE*: Mimosa	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Rock outcrop.				
MuC*: Mimosa	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
MvB2, MvC2 Mountview	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
NeB2 Nesbitt	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
No Nolin	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim.
Ob Ocana	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Oc Ocana	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Pd*. Pits-dumps				
SeC2, SeD2 Sengtown	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
SeE2 Sengtown	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
Sf*. Slickens				
SgC2 Sugargrove	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
SgD2 Sugargrove	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SuD---- Sulphura	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
SUF---- Sulphura	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Ta---- Taft	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
TbC---- Talbott	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
TvB---- Tarklin	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
UD*. Udorthents				
WaC2---- Waynesboro	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WaD2---- Waynesboro	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
AmB Armour	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
Ar Arrington	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily.
BaC*: Barfield	Severe: depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, droughty.	Slope, depth to rock.
Rock outcrop.					
BeB2 Bewleyville	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily.
BeC2 Bewleyville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
ByB Byler	Moderate: seepage.	Severe: piping.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness.
CaB Captina	Moderate: seepage.	Moderate: piping, wetness.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness.
DeD2, DeE2 Dellrose	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope	Slope.
DkB2 Dickson	Moderate: seepage, slope.	Severe: piping.	Percs slowly, slope.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.
Eg Egam	Slight	Moderate: thin layer, hard to pack, wetness.	Deep to water	Flooding	Favorable.
EtB Etowah	Moderate: seepage, slope.	Moderate: thin layer, piping.	Deep to water	Slope, erodes easily.	Erodes easily.
EtC2 Etowah	Severe: slope.	Moderate: thin layer, piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions
Go---------- Godwin	Slight---------	Severe: wetness.	Flooding-------	Wetness, flooding.	Wetness.
Gu---------- Guthrie	Slight---------	Severe: piping, ponding.	Ponding, percs slowly.	Ponding, percs slowly, rooting depth.	Erodes easily, ponding, rooting depth.
HaC2---------- Hampshire	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
HaD2---------- Hampshire	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
HhB2, HhC2--------- Harpeth	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
HrB*: Harpeth----------	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
Urban land.					
HuB---------- Humphreys	Severe: seepage.	Moderate: piping.	Deep to water	Slope, droughty.	Favorable.
InD2, InE2--------- Inman	Severe: slope.	Severe: hard to pack, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
Me---------- Melvin	Moderate: seepage.	Severe: piping, wetness.	Flooding-------	Wetness, erodes easily, flooding.	Erodes easily, wetness.
MmB2---------- Mimosa	Moderate: depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.
MmC2---------- Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.
MmD2---------- Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.
MmD3---------- Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slow intake, slope, percs slowly.	Slope, percs slowly.
MmE2---------- Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
MnC2 Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.
MrE*: Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.
Rock outcrop.					
MuC*: Mimosa	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.
Urban land.					
MvB2 Mountview	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily.
MvC2 Mountview	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
NeB2 Nesbitt	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Slope	Wetness, slope, erodes easily.	Erodes easily, wetness.
No Nolin	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily.
Ob, Oc Ocana	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Flooding	Favorable.
Pd*. Pits-dumps					
SeC2 Sengtown	Moderate: seepage, slope.	Moderate: hard to pack.	Deep to water	Slope	Favorable.
SeD2, SeE2 Sengtown	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope	Slope.
Sf*. Slickens					
SgC2 Sugargrove	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope	Slope, large stones.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
SgD2---------- Sugargrove	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope----------	Slope, large stones.
SuD, SUF---------- Sulphura	Severe: seepage, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.
Ta---------- Taft	Moderate: seepage.	Severe: piping.	Percs slowly---	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.
TbC---------- Talbott	Moderate: depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, depth to rock.	Depth to rock, erodes easily.
TvB---------- Tarklin	Severe: seepage.	Severe: piping.	Percs slowly, slope.	Slope, wetness, droughty.	Wetness, rooting depth.
UD*. Udorthents					
WaC2---------- Waynesboro	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Slope.
WaD2---------- Waynesboro	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
AmB---------- Armour	0-11	Silt loam--------	CL-ML, CL, ML	A-4	0	90-100	80-100	75-95	70-90	25-35	5-10
	11-60	Silty clay loam, silt loam.	CL	A-4, A-6	0	90-100	80-100	75-95	70-95	30-40	8-18
Ar---------- Arrington	0-31	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0	100	90-100	85-95	75-95	25-40	4-15
	31-60	Silt loam, silty clay loam.	CL, ML, CL-ML	A-4, A-6	0	95-100	90-100	85-100	75-95	25-40	4-15
BaC*:											
Barfield--------	0-4	Silty clay loam	CL, CH, MH	A-6, A-7	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	4-18	Clay, silty clay loam, flaggy clay.	CH, MH, CL	A-7, A-6	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
BeB2, BeC2------- Bewleyville	0-8	Silty clay loam	CL	A-6	0	100	95-100	95-100	90-100	32-40	11-18
	8-35	Silty clay loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	90-100	85-100	30-45	11-22
	35-60	Clay, clay loam, silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-5	75-100	75-100	70-95	60-95	35-65	12-32
ByB---------- Byler	0-9	Silt loam--------	CL-ML, CL, ML	A-4	0	100	95-100	85-95	75-90	20-30	3-10
	9-20	Silt loam, silty clay loam.	CL-ML, CL, ML	A-4, A-6	0	100	95-100	85-100	85-95	20-40	3-15
	20-42	Silty clay loam, silt loam, gravelly silty clay loam.	CL, ML	A-6, A-4, A-7	0-5	80-100	75-100	70-100	60-95	30-45	8-20
	42-60	Clay, silty clay, gravelly clay.	MH, ML	A-7	0-10	65-100	60-100	55-95	50-90	40-60	12-25
CaB---------- Captina	0-7	Silt loam--------	CL, CL-ML	A-4	0	95-100	92-100	85-100	65-90	<30	4-10
	7-21	Silt loam, silty clay loam.	CL	A-6	0	95-100	92-100	85-100	65-95	20-40	10-20
	21-60	Silt loam, silty clay loam.	CL	A-6	0-5	95-100	90-95	85-95	65-85	20-40	10-20
DeD2, DeE2------- Dellrose	0-14	Gravelly silt loam.	CL-ML, SC, CL, GC	A-4, A-6	0-10	55-90	55-85	45-75	40-70	20-35	5-15
	14-60	Gravelly silty clay loam, gravelly silt loam.	ML, CL, GC, SC	A-4, A-6, A-7	0-15	60-90	55-90	50-75	40-70	30-45	8-18
DkB2---------- Dickson	0-11	Silt loam--------	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	20-28	2-7
	11-20	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	95-100	85-95	25-38	5-17
	20-47	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	25-42	7-20
	47-60	Gravelly silty clay loam, gravelly clay.	MH, ML, GC, CL	A-6, A-7	0-20	70-100	60-100	55-100	45-95	35-65	12-30

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
Eg Egam	0-25	Silt loam, silty clay loam.	CL, ML, CL-ML	A-6, A-7, A-4	0	95-100	95-100	85-100	75-95	21-45	4-20
	25-60	Silty clay, silty clay loam, clay.	CL, CH	A-7, A-6	0	95-100	95-100	90-100	85-95	38-60	15-30
EtB, EtC2 Etowah	0-8	Silt loam	ML, CL, CL-ML	A-4	0	80-100	75-100	70-95	55-70	20-30	3-10
	8-30	Silty clay loam, clay loam, silt loam.	CL	A-6	0	80-100	75-100	70-95	65-85	25-35	10-15
	30-60	Silty clay loam, clay loam.	CL, ML	A-6, A-7	0	80-100	75-100	70-95	65-85	39-45	15-25
Go Godwin	0-7	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	98-100	90-100	80-95	20-40	5-16
	7-26	Silty clay loam, silty clay.	CL, MH, CH, ML	A-7	0	100	98-100	95-100	85-95	43-55	18-27
	26-60	Silty clay, clay	CL, CH, MH	A-7	0	100	98-100	90-100	85-95	43-70	20-40
Gu Guthrie	0-7	Silt loam	ML, CL-ML	A-4	0	100	100	90-100	85-95	18-28	2-7
	7-50	Silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	85-95	23-39	5-15
	50-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	90-100	85-100	80-100	70-95	20-42	5-20
HaC2, HaD2 Hampshire	0-6	Silt loam	CL-ML, CL, ML	A-4, A-6	0	95-100	95-100	90-100	80-90	20-40	3-20
	6-43	Clay, silty clay	CL, CH, MH	A-7	0-3	80-100	75-100	65-95	55-85	45-70	21-38
	43-49	Very channery loam, very channery clay loam.	CL, GC, SC, GM	A-6, A-7	10-50	55-75	50-75	40-70	30-60	30-48	11-25
	49	Weathered bedrock	---	---	---	---	---	---	---	---	---
HhB2, HhC2 Harpeth	0-7	Silt loam	ML, CL, CL-ML	A-4	0	100	95-100	90-100	80-90	20-30	3-10
	7-35	Silt loam, silty clay loam.	CL, ML	A-4, A-6	0	100	95-100	90-95	85-95	30-40	8-17
	35-60	Silty clay loam, clay, clay loam, silty clay.	CL, MH, ML, CH	A-7	0	90-100	85-100	75-95	60-85	40-55	15-25
HrB*: Harpeth	0-7	Silt loam	ML, CL, CL-ML	A-4	0	100	95-100	90-100	80-90	20-30	3-10
	7-35	Silt loam, silty clay loam.	CL, ML	A-4, A-6	0	100	95-100	90-95	85-95	30-40	8-17
	35-60	Silty clay loam, clay, clay loam, silty clay.	CL, MH, ML, CH	A-7	0	90-100	85-100	75-95	60-85	40-55	15-25
Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
HuB---------- Humphreys	0-8	Gravelly silt loam.	ML, CL-ML, CL, GM-GC	A-4	0-5	60-75	55-75	50-70	35-55	18-28	3-10
	8-55	Gravelly silty clay loam, gravelly silt loam.	CL, GC, SC	A-6	0-5	55-75	50-75	45-70	40-60	28-40	10-16
	55-60	Gravelly silty clay loam, gravelly clay loam.	CL, GC, SC	A-4, A-6, A-2	0-10	45-75	40-75	30-65	20-55	25-35	8-15
InD2, InE2------- Inman	0-6	Flaggy silty clay loam.	CL	A-6, A-7	20-50	95-100	90-100	85-95	70-90	28-45	10-20
	6-32	Flaggy silty clay, flaggy clay.	CH, CL, MH	A-6, A-7	20-50	95-100	90-100	85-95	75-95	38-60	16-30
	32	Weathered bedrock	---	---	---	---	---	---	---	---	---
Me---------- Melvin	0-5	Silt loam--------	CL, CL-ML, ML	A-4	0	95-100	90-100	80-100	80-95	25-35	4-10
	5-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	80-98	25-40	5-20
MmB2, MmC2, MmD2- Mimosa	0-7	Silt loam--------	CL, ML	A-4, A-6, A-7	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-15	Silty clay loam, silty clay, clay.	ML, CL, MH, CH	A-7	0	95-100	90-100	85-95	80-90	45-60	18-28
	15-55	Clay, silty clay	CH, MH	A-7	0	95-100	90-100	85-95	80-95	51-65	25-35
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MmD3---------- Mimosa	0-4	Silty clay-------	CH, MH	A-7	0	95-100	90-100	85-95	75-90	51-65	25-35
	4-47	Clay, silty clay	CH, MH	A-7	0	95-100	90-100	85-95	80-95	51-65	25-35
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MmE2, MnC2------- Mimosa	0-7	Silt loam--------	CL, ML	A-4, A-6, A-7	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-15	Silty clay loam, silty clay, clay.	ML, CL, MH, CH	A-7	0	95-100	90-100	85-95	80-90	45-60	18-28
	15-55	Clay, silty clay	CH, MH	A-7	0	95-100	90-100	85-95	80-95	51-65	25-35
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MrE*: Mimosa----------	0-7	Silt loam--------	CL, ML	A-4, A-6, A-7	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-15	Silty clay loam, silty clay, clay.	ML, CL, MH, CH	A-7	0	95-100	90-100	85-95	80-90	45-60	18-28
	15-55	Clay, silty clay	CH, MH	A-7	0	95-100	90-100	85-95	80-95	51-65	25-35
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
MuC*:											
Mimosa	0-7	Silt loam	CL, ML	A-4, A-6, A-7	0	80-100	75-100	65-95	60-90	25-45	7-20
	7-15	Silty clay loam, silty clay, clay.	ML, CL, MH, CH	A-7	0	95-100	90-100	85-95	80-90	45-60	18-28
	15-55	Clay, silty clay	CH, MH	A-7	0	95-100	90-100	85-95	80-95	51-65	25-35
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Urban land.											
MvB2, MvC2	0-6	Silt loam	ML, CL-ML	A-4	0	100	95-100	95-100	80-96	20-30	2-7
Mountview	6-29	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	95-100	90-100	80-96	30-43	10-23
	29-60	Clay, silty clay	CL, ML, MH, CH	A-6, A-7	0-20	75-100	65-100	60-98	50-96	35-65	11-32
NeB2	0-7	Silt loam	ML, CL, CL-ML	A-4	0	100	95-100	80-95	75-90	15-30	3-10
Nesbitt	7-35	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	100	95-100	85-100	85-95	30-45	10-20
	35-60	Silty clay loam	CL, ML	A-6, A-7	0	100	95-100	80-95	75-95	30-45	10-20
No	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	100	95-100	90-100	80-100	25-40	5-18
Nolin	8-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	100	95-100	85-100	75-100	25-46	5-23
Ob	0-9	Gravelly silt loam.	CL-ML, CL, SM, GM	A-4, A-6	0	65-80	60-75	50-70	36-65	20-35	3-12
Ocana	9-60	Gravelly silt loam, gravelly loam.	GM-GC, CL, GC, GM	A-4, A-6, A-2	0	60-80	55-75	45-65	30-55	20-40	3-18
Oc	0-9	Gravelly silt loam.	CL-ML, CL, SM, GM	A-4, A-6	0-8	65-80	60-75	50-70	36-65	20-35	3-12
Ocana	9-48	Gravelly silt loam, gravelly loam.	GM-GC, CL, GC, GM	A-4, A-6, A-2	0-8	60-80	55-75	45-65	30-55	20-40	3-18
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pd*.											
Pits-dumps											
SeC2, SeD2, SeE2	0-11	Gravelly silt loam.	ML, CL, CL-ML, GM	A-4	0-5	60-90	55-80	45-75	45-70	25-35	4-10
Sengtown	11-16	Gravelly silt loam, gravelly silty clay loam.	CL-ML, CL, GM-GC	A-4, A-6	0-5	60-90	55-80	45-75	45-70	25-40	5-20
	16-60	Gravelly clay, gravelly silty clay.	CH, CL, GC	A-7	0-5	50-90	40-75	40-70	40-70	45-70	20-40
Sf*.											
Slickens											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
SgC2, SgD2---- Sugargrove	0-13	Gravelly silt loam.	ML, CL, CL-ML, GM	A-4	0-10	65-85	55-80	45-75	40-75	25-35	4-10
	13-32	Gravelly silt loam, gravelly silty clay loam.	CL-ML, CL, GM-GC	A-4, A-6	0-15	65-85	55-80	45-75	40-70	25-40	6-20
	32-41	Gravelly silty clay loam, very gravelly silty clay loam, gravelly silty clay.	CL-ML, CL, GM-GC	A-4, A-6	0-25	55-85	55-80	45-75	35-70	25-40	6-20
	41-49	Weathered bedrock	---	---	---	---	---	---	---	---	---
	49	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
SuD, SUF---- Sulphura	0-3	Channery silt loam.	ML, CL-ML, CL	A-4	0-8	70-90	65-85	60-80	55-75	20-32	2-10
	3-27	Very channery silt loam, very channery silty clay loam.	GC, GM-GC	A-2, A-4, A-6	5-20	45-60	40-55	35-50	30-45	23-32	6-12
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ta---- Taft	0-8	Silt loam----	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	18-30	2-10
	8-23	Silt loam----	CL-ML, CL, ML	A-4, A-6	0	100	95-100	95-100	85-95	23-38	5-16
	23-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	23-42	5-20
TbC---- Talbott	0-5	Silt loam----	CL	A-4, A-6	0-5	95-100	90-100	85-95	75-95	25-40	8-16
	5-30	Clay, silty clay	CL, CH	A-7	0-10	95-100	90-100	85-95	80-95	41-80	20-45
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
TvB---- Tarklin	0-8	Gravelly silt loam.	ML, CL, GM, SM	A-4	0-10	60-80	55-75	45-75	40-70	25-35	2-10
	8-20	Gravelly silt loam, gravelly silty clay loam.	ML, CL, GM, GC	A-4, A-6, A-7	0-10	60-80	55-75	45-75	40-70	25-45	2-20
	20-46	Gravelly silt loam, gravelly loam.	ML, CL, GM, GC	A-4, A-6, A-7, A-2	0-10	60-80	45-75	40-75	30-70	25-45	2-20
	46-60	Gravelly loam, very gravelly silt loam.	GM, GC	A-2	0-15	40-60	30-50	25-45	20-40	25-45	2-20
UD*. Udorthents											
WaC2, WaD2---- Waynesboro	0-8	Clay loam----	ML, CL-ML, CL, SM	A-4	0-5	85-100	80-100	70-95	43-70	18-30	2-9
	8-15	Clay loam----	CL, SC	A-4, A-6, A-7	0-5	90-100	85-100	75-95	45-75	30-41	9-17
	15-60	Clay loam, clay	MH, CL, ML	A-4, A-6, A-7	0-5	90-100	80-100	70-98	55-75	35-68	9-32

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
AmB	0-11	0.6-2.0	0.18-0.23	5.1-6.0	Low	0.43	5
Armour	11-60	0.6-2.0	0.17-0.20	5.1-6.0	Low	0.37	
Ar	0-31	0.6-2.0	0.19-0.22	6.1-7.3	Low	0.37	5
Arrington	31-60	0.6-2.0	0.19-0.22	6.1-7.3	Low	0.37	
BaC*:							
Barfield	0-4	0.2-0.6	0.10-0.15	6.1-7.8	Moderate	0.24	1
	4-18	0.2-0.6	0.09-0.14	6.1-7.8	High	0.17	
	18	---	---	---	---	----	
Rock outcrop.							
BeB2, BeC2	0-8	0.6-2.0	0.18-0.20	4.5-6.5	Low	0.37	5
Bewleyville	8-35	0.6-2.0	0.18-0.20	4.5-5.5	Low	0.37	
	35-60	0.6-2.0	0.12-0.17	4.5-5.5	Moderate	0.37	
ByB	0-9	0.6-2.0	0.18-0.22	5.1-6.0	Low	0.43	3
Byler	9-20	0.6-2.0	0.17-0.20	5.1-6.0	Low	0.37	
	20-42	0.06-0.2	0.04-0.08	5.1-6.0	Low	0.32	
	42-60	0.2-0.6	0.04-0.08	5.1-6.0	Moderate	0.24	
CaB	0-7	0.6-2.0	0.14-0.20	4.5-6.5	Low	0.43	3
Captina	7-21	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.43	
	21-60	0.06-0.2	0.08-0.12	4.5-5.5	Low	0.37	
DeD2, DeE2	0-14	2.0-6.0	0.10-0.17	5.1-6.0	Low	0.24	5
Dellrose	14-60	2.0-6.0	0.09-0.16	5.1-6.0	Low	0.24	
DkB2	0-11	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43	3
Dickson	11-20	0.6-2.0	0.18-0.20	4.5-5.5	Low	0.43	
	20-47	0.06-0.2	0.05-0.11	4.5-5.5	Low	0.43	
	47-60	0.2-0.6	0.02-0.04	4.5-5.5	Moderate	0.28	
Eg	0-25	0.2-0.6	0.18-0.22	6.1-7.3	Moderate	0.32	5
Egam	25-60	0.2-0.6	0.14-0.20	6.5-7.3	Moderate	0.32	
EtB, EtC2	0-8	0.6-2.0	0.15-0.20	5.1-5.5	Low	0.37	5
Etowah	8-30	0.6-2.0	0.16-0.20	5.1-5.5	Low	0.32	
	30-60	0.6-2.0	0.16-0.20	5.1-5.5	Low	0.32	
Go	0-7	0.6-2.0	0.18-0.22	6.1-7.3	Low	0.32	5
Godwin	7-26	0.2-0.6	0.14-0.18	6.1-7.3	Moderate	0.32	
	26-60	0.2-0.6	0.12-0.18	6.1-7.3	Moderate	0.32	
Gu	0-7	0.6-2.0	0.20-0.22	3.6-5.5	Low	0.43	3
Guthrie	7-50	0.6-2.0	0.18-0.20	3.6-5.5	Low	0.43	
	50-60	0.06-0.2	0.03-0.05	3.6-5.5	Low	0.43	
HaC2, HaD2	0-6	0.6-2.0	0.18-0.22	5.1-6.0	Low	0.43	3
Hampshire	6-43	0.2-0.6	0.12-0.16	5.1-6.0	Moderate	0.28	
	43-49	0.2-0.6	0.07-0.12	5.1-6.0	Low	0.24	
	49	---	---	---	---	----	
HhB2, HhC2	0-7	0.6-2.0	0.18-0.22	5.1-6.5	Low	0.43	5
Harpeth	7-35	0.6-2.0	0.16-0.20	5.1-6.5	Low	0.43	
	35-60	0.6-2.0	0.12-0.17	5.1-6.5	Low	0.37	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
HrB*:							
Harpeth	0-7	0.6-2.0	0.18-0.22	5.1-6.5	Low	0.43	5
	7-35	0.6-2.0	0.16-0.20	5.1-6.5	Low	0.43	
	35-60	0.6-2.0	0.12-0.17	5.1-6.5	Low	0.37	
Urban land.							
HuB	0-8	2.0-6.0	0.10-0.15	5.1-6.0	Low	0.28	5
Humphreys	8-55	2.0-6.0	0.09-0.14	5.1-6.0	Low	0.24	
	55-60	2.0-6.0	0.06-0.12	5.1-6.0	Low	0.24	
InD2, InE2	0-6	0.6-2.0	0.08-0.12	6.1-7.3	Moderate	0.28	2
Inman	6-32	0.2-0.6	0.06-0.11	6.1-7.3	Moderate	0.24	
	32	---	---	---	---	----	
Me	0-5	0.6-2.0	0.18-0.23	5.6-7.3	Low	0.43	5
Melvin	5-60	0.6-2.0	0.18-0.23	5.6-7.3	Low	0.43	
MmB2, MmC2, MmD2-	0-7	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.37	3
Mimosa	7-15	0.2-0.6	0.12-0.16	4.5-6.0	Moderate	0.28	
	15-55	0.06-0.2	0.10-0.16	4.5-6.0	Moderate	0.24	
	55	---	---	---	---	----	
MmD3	0-4	0.2-0.6	0.12-0.18	4.5-6.0	Moderate	0.28	3
Mimosa	4-47	0.06-0.2	0.10-0.16	4.5-6.0	Moderate	0.24	
	47	---	---	---	---	----	
MmE2, MnC2	0-7	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.37	3
Mimosa	7-15	0.2-0.6	0.12-0.16	4.5-6.0	Moderate	0.28	
	15-55	0.06-0.2	0.10-0.16	4.5-6.0	Moderate	0.24	
	55	---	---	---	---	----	
MrE*:							
Mimosa	0-7	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.37	3
	7-15	0.2-0.6	0.12-0.16	4.5-6.0	Moderate	0.28	
	15-55	0.06-0.2	0.10-0.16	4.5-6.0	Moderate	0.24	
	55	---	---	---	---	----	
Rock outcrop.							
MuC*:							
Mimosa	0-7	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.37	3
	7-15	0.2-0.6	0.12-0.16	4.5-6.0	Moderate	0.28	
	15-55	0.06-0.2	0.10-0.16	4.5-6.0	Moderate	0.24	
	55	---	---	---	---	----	
Urban land.							
MvB2, MvC2	0-6	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43	5
Mountview	6-29	0.6-2.0	0.17-0.20	4.5-5.5	Low	0.43	
	29-60	0.6-2.0	0.10-0.15	4.5-5.5	Moderate	0.32	
NeB2	0-7	0.6-2.0	0.18-0.22	5.1-6.0	Low	0.43	5
Nesbitt	7-35	0.6-2.0	0.17-0.20	5.1-6.0	Low	0.37	
	35-60	0.2-2.0	0.10-0.15	5.1-6.0	Low	0.37	
No	0-8	0.6-2.0	0.18-0.23	5.6-8.4	Low	0.43	5
Nolin	8-60	0.6-2.0	0.18-0.23	5.6-8.4	Low	0.43	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
Ob	0-9	2.0-6.0	0.12-0.10	5.6-7.3	Low	0.28	5
Ocana	9-60	2.0-6.0	0.10-0.17	5.6-7.3	Low	0.28	
Oc	0-9	2.0-6.0	0.12-0.18	5.6-7.3	Low	0.28	5
Ocana	9-48	2.0-6.0	0.10-0.17	5.6-7.3	Low	0.28	
	48	---	---	---	---	----	
Pd*. Pits-dumps							
SeC2, SeD2, SeE2-	0-11	0.6-2.0	0.10-0.16	4.5-6.0	Low	0.28	5
Sengtown	11-16	0.6-2.0	0.10-0.15	4.5-6.0	Low	0.24	
	16-60	0.6-2.0	0.08-0.12	4.5-6.0	Moderate	0.24	
Sf*. Slickens							
SgC2, SgD2	0-13	0.6-6.0	0.14-0.19	4.5-5.5	Low	0.28	3
Sugargrove	13-32	0.6-6.0	0.14-0.19	4.5-5.5	Low	0.28	
	32-41	0.6-6.0	0.10-0.19	4.5-5.5	Low	0.28	
	41-49	---	---	---	---	----	
	49	---	---	---	---	----	
SuD, SUF	0-3	2.0-6.0	0.12-0.17	5.1-6.0	Low	0.24	2
Sulphura	3-27	2.0-6.0	0.07-0.14	5.1-6.0	Low	0.24	
	27	---	---	---	---	----	
Ta	0-8	0.6-2.0	0.20-0.22	4.5-5.5	Low	0.43	3
Taft	8-23	0.6-2.0	0.18-0.20	4.5-5.5	Low	0.43	
	23-60	0.06-0.2	0.03-0.07	4.5-5.5	Low	0.43	
TbC	0-5	0.6-2.0	0.16-0.20	5.1-6.0	Low	0.37	2
Talbott	5-30	0.2-0.6	0.10-0.14	5.1-6.0	Moderate	0.24	
	30	---	---	---	---	----	
TvB	0-8	0.6-6.0	0.13-0.18	3.6-5.5	Low	0.28	3
Tarklin	8-20	0.6-2.0	0.13-0.18	3.6-5.5	Low	0.28	
	20-46	0.06-0.2	0.06-0.10	3.6-5.5	Low	0.28	
	46-60	0.6-6.0	0.04-0.08	3.6-5.5	Low	.0.20	
UD*. Udorthents							
WaC2, WaD2	0-8	0.6-2.0	0.15-0.21	4.5-5.5	Low	0.28	5
Waynesboro	8-15	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.28	
	15-60	0.6-2.0	0.13-0.18	4.5-5.5	Low	0.28	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
AmB---------- Armour	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Ar---------- Arrington	B	Occasional	Very brief	Dec-Mar	4.0-6.0	Apparent	Jan-Mar	>60	---	Low------	Low.
BaC*:											
Barfield----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	High-----	Low.
Rock outcrop.											
BeB2, BeC2-------- Bewleyville	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
ByB---------- Byler	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	>60	---	High-----	Moderate.
CaB---------- Captina	C	None--------	---	---	2.0-3.0	Perched	Dec-Apr	>60	---	Moderate	High.
DeD2, DeE2-------- Dellrose	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
DkB2---------- Dickson	C	None--------	---	---	2.0-3.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
Eg---------- Egam	C	Occasional	Very brief	Dec-Mar	3.0-4.0	Apparent	Dec-Mar	>60	---	High-----	Low.
EtB, EtC2--------- Etowah	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Go---------- Godwin	D	Occasional	Very brief	Dec-Mar	1.0-2.0	Apparent	Dec-Mar	>60	---	High-----	Low.
Gu---------- Guthrie	D	Ponded------	Long------	Dec-Apr	+2-1.0	Perched	Dec-May	>60	---	High-----	High.
HaC2, HaD2-------- Hampshire	C	None--------	---	---	>6.0	---	---	40-60	Soft	High-----	Moderate.
HhB2, HhC2-------- Harpeth	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
HrB*:											
Harpeth----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land.											
HuB---------- Humphreys	B	Rare--------	---	---	5.0-6.0	Apparent	Dec-Mar	>60	---	Moderate	Moderate.
InD2, InE2-------- Inman	C	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	Low.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
Me Melvin	D	Frequent	Brief to long.	Dec-May	0-1.0	Apparent	Dec-May	>60	---	High	Low.
MmB2, MmC2, MmD2, MmD3, MmE2, MnC2 Mimosa	C	None	---	---	>6.0	---	---	40-60	Hard	High	Moderate.
MrE*: Mimosa	C	None	---	---	>6.0	---	---	40-60	Hard	High	Moderate.
Rock outcrop.											
MuC*: Mimosa	C	None	---	---	>6.0	---	---	40-60	Hard	High	Moderate.
Urban land.											
MvB2, MvC2 Mountview	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
NeB2 Nesbitt	B	None	---	---	2.0-4.0	Perched	Jan-Mar	>60	---	High	Moderate.
No Nolin	B	Occasional	Brief	Feb-May	3.0-6.0	Apparent	Feb-Mar	>60	---	Low	Moderate.
Ob Ocana	B	Occasional	Brief	Dec-Mar	>6.0	---	Dec-May	>60	Hard	Low	Low.
Oc Ocana	B	Occasional	Brief	Dec-Mar	>6.0	---	---	40-60	Hard	Low	Low.
Pd*. Pits-dumps											
SeC2, SeD2, SeE2 Sengtown	B	None	---	---	>6.0	---	---	>60	---	High	Moderate.
Sf*. Slickens											
SgC2, SgD2 Sugargrove	B	None	---	---	>6.0	---	---	40-60	Hard	Moderate	Moderate.
SuD, SUF Sulphura	B	None	---	---	>6.0	---	---	20-40	Hard	Low	Moderate.
Ta Taft	C	None	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High	High.
TbC Talbott	C	None	---	---	>6.0	---	---	20-40	Hard	High	Moderate.
TvB Tarklin	C	None	---	---	1.5-2.0	Perched	Jan-Apr	>60	---	Moderate	High.
UD*. Udorthents											
WaC2, WaD2 Waynesboro	B	None	---	---	>6.0	---	---	>60	---	High	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Armour	Fine-silty, mixed, thermic Ultic Hapludalfs
Arrington	Fine-silty, mixed, thermic Cumulic Hapludolls
Barfield	Clayey, mixed, thermic Lithic Hapludolls
Bewleyville	Fine-silty, siliceous, thermic Typic Paleudults
Byler	Fine-silty, siliceous, thermic Typic Fragiudalfs
Captina	Fine-silty, siliceous, mesic Typic Fragiudults
Dellrose	Fine-loamy, mixed, thermic Humic Hapludults
Dickson	Fine-silty, siliceous, thermic Glossic Fragiudults
Egam	Fine, mixed, thermic Cumulic Hapludolls
Etowah	Fine-loamy, siliceous, thermic Typic Paleudults
Godwin	Fine, mixed, thermic Cumulic Haplaquolls
Guthrie	Fine-silty, siliceous, thermic Typic Fragiaquults
Hampshire	Fine, mixed, thermic Ultic Hapludalfs
Harpeth	Fine-silty, mixed, thermic Typic Paleudalfs
Humphreys	Fine-loamy, siliceous, thermic Humic Hapludults
Inman	Fine, mixed, thermic Ruptic-Alfic Eutrochrepts
Melvin	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Mimosa	Fine, mixed, thermic Typic Hapludalfs
Mountview	Fine-silty, siliceous, thermic Typic Paleudults
Nesbitt	Fine-silty, siliceous, thermic Aquic Paleudalfs
Nolin	Fine-silty, mixed, mesic Dystric Fluventic Eutrochrepts
Ocana	Fine-loamy, mixed, thermic Dystric Fluventic Eutrochrepts
Sengtown	Fine, mixed, thermic Typic Paleudalfs
Sugargrove	Fine-loamy, mixed, thermic Typic Hapludults
Sulphura	Loamy-skeletal, siliceous, thermic Ruptic-Alfic Dystrochrepts
Taft	Fine-silty, siliceous, thermic Glossaquic Fragiudults
Talbott	Fine, mixed, thermic Typic Hapludalfs
Tarklin	Fine-loamy, siliceous, mesic Typic Fragiudults
Waynesboro	Clayey, kaolinitic, thermic Typic Paleudults

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